Monies for Marine Conservation:

A White Paper Examining New Funding Sources for Oceans and Coasts

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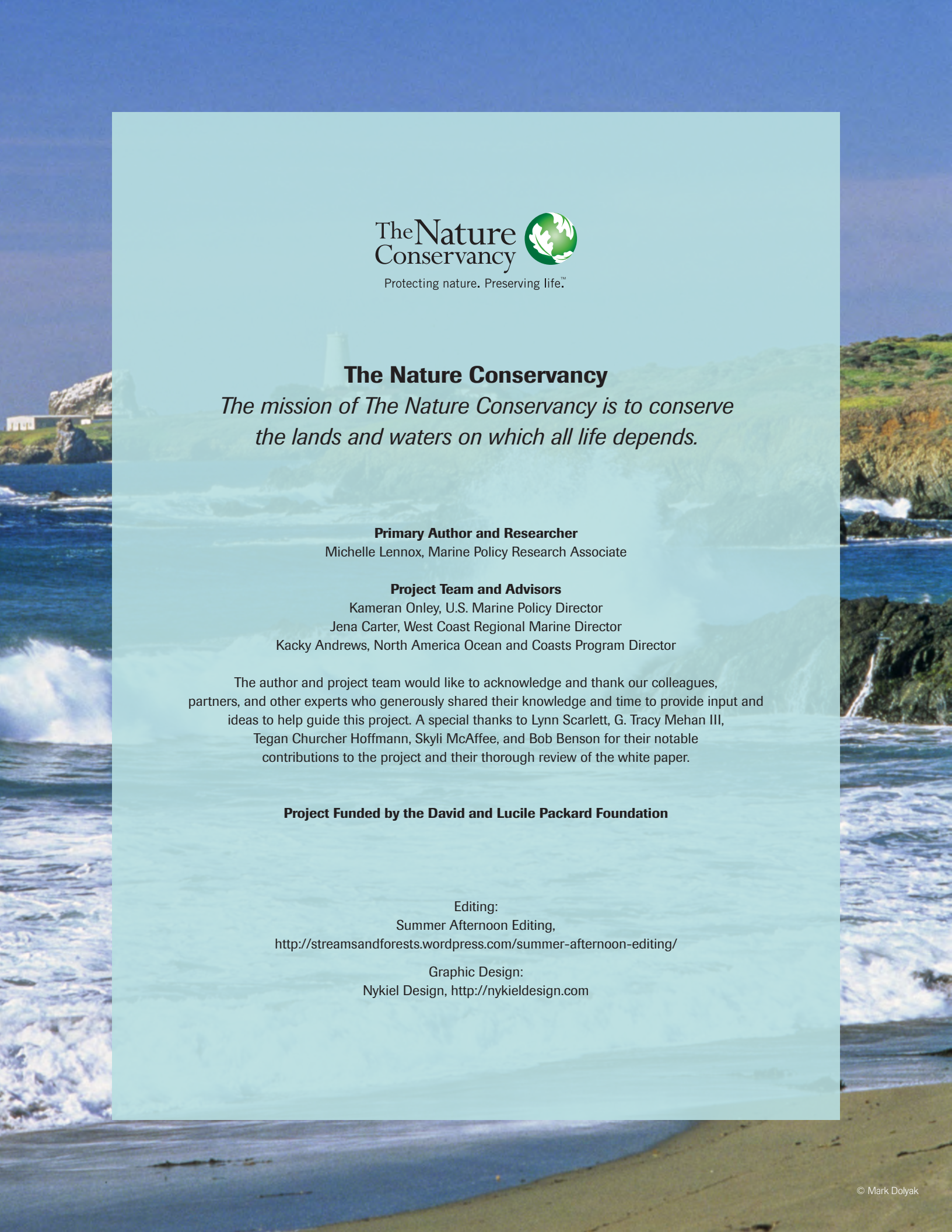

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The mission of The Nature Conservancy is to conserve the lands and waters on which all life depends.

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The author and project team would like to acknowledge and thank our colleagues, partners, and other experts who generously shared their knowledge and time to provide input and ideas to help guide this project. A special thanks to Lynn Scarlett, G. Tracy Mehan III, Tegan Churcher Hoffmann, Skyli McAffee, and Bob Benson for their notable contributions to the project and their thorough review of the white paper.

Project Funded by the David and Lucile Packard Foundation

Editing:
Summer Afternoon Editing,
http://streamsandforests.wordpress.com/summer-afternoon-editing/

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Nykiel Design, http://nykieldesign.com

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Chapter 1: Background

Introduction

Federal financing for ocean and coastal conservation is a landscape composed of dozens of government agencies, grant programs with differing objectives, and declining funding. All too often, funds are piecemeal and provided for a short duration, making it a challenge to achieve large conservation visions and results at a meaningful scale.

In 2010, The Nature Conservancy launched a project investigating new and sustainable federal funding mechanisms to support marine conservation, restoration, and planning in the United States. The Conservancy began its process with a thorough literature search and developed an inventory of funding options. The advantages and disadvantages of each funding source were analyzed and criteria developed to narrow the revenue sources to those that may best contribute to conservation outcomes. Throughout the project, expert opinion was solicited and roundtables were held to gather feedback. This white paper presents the research and assessment results.

Revenue sources examined in this report include:

- Fines derived from illegal activities;
- Mitigation;
- Market-based approaches;
- Taxes and user fees within the energy, fisheries, and shipping sectors;
- Public-private partnership agreements; and
- Modifications to existing funding streams to direct funds to ocean and coastal efforts.

For the purposes of this document, the terms "marine" and "oceans and coasts" are used interchangeably. This project seeks to address the funding needs of the broader ocean and coastal ecosystem.

The revenue sources presented in this document are not necessarily mutually exclusive. Within each category, various financing tools and approaches are available and can often be combined to achieve the funding goal. It should be noted that this white paper is not intended to provide an exhaustive analysis of all potential sources of funding that can be used to support conservation, restoration, and planning efforts; rather the intent is to identify federal funding sources that show promise for future investments in our oceans and coasts.

The Federal Funding Landscape

For years, there has been chronic underinvestment in marine conservation funding. Underfunding and shrinking budgets at the federal, regional, state, and local levels have

left critical habitats unmapped and unprotected; reduced monitoring and scientific investments; hampered restoration efforts; and impeded new, effective national policy initiatives such as fishery reforms, regional ocean governance, marine spatial planning, large-scale coastal conservation, and ecosystem-based management. This situation persists despite longstanding and widespread recognition of the problem.

Environmental issues typically receive less attention during economic downturns (Gallup, 2009), though environmental and economic benefits often overlap. The recession and high unemployment rates have made job creation a top priority for the nation. Furthermore, the soaring federal budget deficit has made it clear that federal spending must be stabilized or reduced. Despite the present political climate and current economic conditions, we must not ignore the environment upon which many livelihoods, economies, and recreational activities rely. As seen firsthand with the Deepwater Horizon oil spill in the Gulf of Mexico, the fouling of ocean and coastal ecosystems can have severe and rippling environmental, economic, and social impacts.

Two bipartisan commissions, the Pew Oceans Commission (2003) and the presidentially appointed U.S. Commission on Ocean Policy (2004), document many important changes needed to protect and restore ocean health while allowing ocean resources to continue to provide robust contributions to the national economy. Recommendations from their reports include increasing coordination in federal waters, promoting ocean education, conserving and restoring coastal habitat, reducing marine pollution, among many others. The Commission on Ocean Policy estimates that new funding of $1.3 billion the first year and $2.4 billion the second year is needed to implement their recommendations. While seemingly expensive, this is a small investment when compared to the following annual figures for ocean-related economic activity: $700 billion in shipped goods, $50 billion from fishing and trade, $11 billion from cruise ships, and $25 billion to $40 billion from offshore oil and gas production. In addition, more than $1 trillion is generated each year within communities immediately adjacent to the coast (U.S. Commission on Ocean Policy, 2004).

In recent history, efforts to secure new funding for ocean conservation have largely been unsuccessful. In 2000, the Conservation and Reinvestment Act (CARA), which would have guaranteed $3.1 billion annually for 15 years to federal, state, and local conservation programs, failed to be enacted (Congressional Record, 2000). Its funding would have come from a portion of the income derived from federal offshore oil and natural gas leases. CARA was considered by many to be the most important conservation funding legislation in half a century, leading to broad bipartisan support within Congress and across the nation. More than five thousand conservation, civic, religious, and business organizations supported CARA, including the National Association of Counties, the U.S. Conference of Mayors, and the National Governors Association (Pew Oceans Commission, 2003). Of the $3.1 billion, the following would have been dedicated specifically to ocean and coastal efforts annually:

- $430 million for coastal states for impact assistance (Department of the Interior);
- $350 million for coastal states for ocean and coastal conservation (Department of Commerce);
- $25 million for coral reef protection (Department of the Interior and Department of Commerce); and
- $900 million for a fully funded Land and Water Conservation Fund (Department of the Interior and Department of Commerce) (Zinn and Corn, 2001).

Since CARA, the idea of capturing oil and gas revenues for conservation has persisted, with numerous bills introduced each year. Some of these bills have led to the successful enactment of legislation benefiting oil- and gas-producing states. One example is the Coastal Impact Assistance Program (CIAP) within the Energy Policy Act of 2005; it authorizes oil and gas revenues to be distributed to outer continental shelf oil and gas producing states for the conservation, protection, and preservation of coastal areas. Under the program, the Secretary of the Interior is authorized to distribute $250 million to producing states for each of the fiscal years 2007 through 2010 (Bureau of Ocean Energy Management, Regulation and Enforcement [BOEMRE], 2010a). In accordance with the allocated funds, BOEMRE awarded grant funds from FY2007 through FY2011. Beginning in FY2012, the U.S. Fish and Wildlife Service will award remaining grant funds, estimated at $500 million. CIAP grant management and monitoring functions have extended beyond the original disbursement period. It is projected the installments will continue to fund grants management and oversight through FY2018.

More recently, in 2010 and again in 2011, legislation to establish a new National Endowment of the Oceans (NEO) has been introduced. NEO's funding would be derived from four sources: interest on Oil Spill Liability Trust Fund investments, outer continental shelf lease revenue, fines collected for violations of federal law, and split recovery from punitive damages (Senate of the United States, 2011a). Despite support from numerous sectors, NEO's enactment is uncertain.

At the same time that new resources are proving challenging to secure, existing funding levels are

decreasing. Monies for key federal agencies with responsibilities for the management and conservation of the oceans, coasts, and Great Lakes are set to decrease in Fiscal Year 2013, and budget examiners project additional reductions in the future.

Project Purpose and Scope

The Conservancy launched a research project in 2010 to identify a range of federal funding options, both legislative and administrative. The Conservancy set out to identify and investigate a suite of traditional, innovative, and/or new financing ideas that if implemented could help fund marine conservation, restoration, and planning work, paying particular attention to funding ideas to help implement federal initiatives such as marine spatial planning.

By examining these options, the Conservancy hopes to spark dialogue about conservation finance and contribute ideas that can help address funding gaps for key national ocean and coastal conservation goals. This white paper may also serve as an initial step in the formation of a coalition of organizations interested in advocating for new funding for the ocean.

Methodology

The field of conservation finance is constantly evolving as new ideas are conceived and tested. To hone existing ideas, while allowing new ideas to emerge, the following four-step methodology was utilized for this project:

Research Financing Strategies

The Conservancy obtained information on existing and innovative financing strategies through literature reviews, research on existing funding structures, and interviews with experts in the field of conservation finance. Building on the Conservancy's substantial experience in creating sustainable financing for conservation around the globe, relevant sustainable finance models from other countries were also reviewed.

Determine Evaluation Criteria and Analyze Ideas

The Conservancy established evaluation criteria to assess the opportunities and limitations of each idea discovered during the research. The criteria also allowed for comparison of different funding mechanisms and revenue sources to identify the most viable options for further exploration and possible implementation. The criteria are as follows and detailed in Table 1:

Table 1. Quantitative and Qualitative Key for Assessing the Viability of Funding Ideas

Financial	**High** = Potential annual revenue is >$200 million	**Moderate** = Potential annual revenue is between $50 and $200 million	**Low** = Potential annual revenue is <$50 million
Legal	**High** = Few legal hurdles	**Moderate** = Some legal hurdles	**Low** = Many legal hurdles
Political	**High** = Few political obstacles to adoption	**Moderate** = Some political obstacles to adoption	**Low** = Many political obstacles to adoption
Social	**High** = Little social opposition	**Moderate** = Some social opposition	**Low** = Much social opposition
Environmental*	**Positive** = Positive environmental impacts	**Neutral** = Neither positive nor negative environmental impacts (or cancel out)	**Negative** = Negative environmental impacts
Timeframe	**Short** = 1-3 years	**Moderate** = 4-7 years	**Long** = 8+ years

** "Environmental impacts" refers to the effects of the revenue source itself on the environment, not the effects of the activities of the industry upon which the revenue source is based.*

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- **Financial –** To understand which funding mechanisms and revenue sources may generate the most revenue, factors include: potential base revenue, administrative and maintenance costs, and the degree of fluctuation in the revenue stream from year to year for public-sector and rate-payer funds. And for market-based opportunities, the amount of private capital that can be invested, and the expected revenue.
- **Legal –** It is important to determine the potential legal obstacles. For example, can the mechanism or revenue source be established within the current legal framework, or would new legislation or executive action be required?
- **Political –** When establishing a public funding mechanism or a revenue stream that requires legislative or executive action, factors include: existing and potential political will, capacity and advocacy abilities of interested organizations, political obstacles, and potential champions.
- **Social –** The success of a funding mechanism or a revenue source is inextricably linked to having a wide base of support from individuals and stakeholders. To determine the potential support and enthusiasm for a mechanism or revenue source, the equity and social impacts of implementing the mechanism or source must be taken into account.
- **Environmental –** The ultimate goal of the funding mechanism is to fund conservation efforts. Therefore, the environmental impacts, both positive and negative, of implementing a new mechanism or revenue stream must be assessed.
- **Timeframe –** Considerations include the amount of time needed to establish the funding mechanism and the time needed for the mechanism to either secure a dedicated revenue source or begin generating revenue.

Solicit Feedback

In 2011, the Conservancy hosted three Funding Option Roundtables to further develop and vet the initial research results. These roundtables encouraged experts from various backgrounds to share successful financing examples from their respective sectors and allowed the Conservancy to gather and ground-truth information. In addition to the roundtables, the Conservancy conducted over a dozen individual interviews with leading sector experts. Information and opinions obtained through these efforts have been incorporated into this white paper.

Develop a White Paper

The Conservancy summarized the results of the study in this white paper to guide decision-making on strategies to increase investments in the conservation of our oceans and coasts.

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Chapter 2: Funding Mechanism and Revenue Source Analysis

The most promising federal funding ideas that emerged from the project are discussed in this section. The two sets of tools – funding mechanisms and revenue sources – must go hand-in-hand; any mechanism must be paired with a robust and predictable revenue source. These options can be selected in various combinations to provide the ideal funding solution for the issue at hand.

Some ideas presented, in particular market-based approaches, can act as both mechanisms and revenue sources. They are mechanisms in that there is a system to mobilize or transfer funds. However, they are also potential revenue sources since there is an investment or fee component to stimulate the system. For the purposes of this document, those market-based ideas are categorized as "revenue sources".

The following section provides brief descriptions of the four funding mechanisms and nineteen revenue sources analyzed for the project. The funding mechanisms are explained in greater detail in *Appendix A: In-Depth Look at Funding Mechanisms,* while the revenue sources are explored further in *Appendix B: In-Depth Look at Revenue Sources.*

For the purposes of this document, a *funding mechanism* is designed to transfer funds to cover costs related to implementing ocean and coastal conservation, restoration, and planning works.

A *revenue source* is designed to generate funds that flow through the funding mechanism to the appropriate works or projects.

Funding Mechanisms

- **Trust Fund**

Federal trust funds are accounting mechanisms used to link receipts with the expenditures of those receipts, usually dedicated for a specific purpose (More information on Page 18).

- **Revolving Loan Fund**

A Revolving Loan Fund consists of a pool of federal funds that recycles money as loans are repaid (Page 19).

- **Payment for Performance**

A payment-for-performance fund is an outcome-based contract between private investors and the federal government to generate cost savings while improving conservation outcomes (Page 20).

Case Study – Payment for Performance: United Kingdom's Social Impact Bond

The Social Impact Bond was implemented as a method to reduce reoffending by individuals serving short-term prison sentences at Peterborough Prison in England. At the time of implementation, 60 percent of the prisoners reoffended, costing the government money. The theory was that if recidivism dropped, it would result in significant cost savings for the government.

Private investors pooled $8 million to fund a local NGO, which offered services such as mentoring and drug counseling. Their goal was to reduce recidivism by ten percent, and if the target was met, investors would get a 7.5 to 13.4 percent return on their investment. The funds would come from government cost savings resulting from improved social service performance (Jupp, 2011).

- **National Conservation Bond**

A national conservation bond would resemble the traditional general obligation (GO) bonds secured by a government's vow to use available resources, including tax revenues, to repay bond holders (Page 22).

Revenue Sources

- **Tax on Imported Maritime Commerce**

An ad valorem tax levied on a percentage of the value of cargo imported to the United States (Page 24).

- **Cruise Ship Environmental Fees**

A cruise ship environmental fee per capita for cruise ship passengers at each port of call (Page 25).

- **Fees for Preferred Shipping Routes**

A premium for preferred commercial shipping routes that emulates tolled roads for faster and more predictable navigation (Page 26).

- **Fees for Aquaculture in Federal Waters**

Opening and leasing federal waters to aquaculture and generating revenue through lease sales, permits, or other fees (Page 27).

- **Seafood Excise Tax**

An excise tax collected by a producer, wholesaler, or retailer on all seafood products sold in the United States (Page 28).

- **Fishing Stamp**

A stamp geared towards anglers that emulates the national Duck Stamp program (Page 29).

Case Study – Fees for Preferred Shipping Routes: Australia's Great Barrier Reef

The Great Barrier Reef Foundation funds research that protects and preserves the Great Barrier Reef, particularly in the face of climate change. The Foundation, in alliance with industry partners, has teamed with investment groups to develop a revenue stream that is based on direct and indirect users of the Reef. This model, in part, would allow the federal government to charge commercial vessels that travel through the Reef. Between 7,500 and 10,000 vessels travel through the Reef annually; to circumvent it adds two days of travel time. The proposed charge for passing through the Reef is AU$1,000 (Hanratty, 2012).

- **Offshore Oil and Gas Revenues**

Dedicating revenues from any number of monetary transactions (leases, rents, and royalties) in the offshore oil and gas industry (Page 30).

- **Offshore Renewable Energy Revenues**

Dedicating revenues from monetary transactions in the offshore renewable energy industry (Page 32).

- **Increased Tax on Crude Oil**

A tax levied on each barrel of crude oil produced or imported into the United States (Page 33).

- **Increased Federal Excise Tax at the Pump**

An increase in the existing federal excise tax on gasoline, with a percentage of the added revenue dedicated to marine conservation (Page 34).

- **Tax on Shipping Bunker Fuel**

A minimal tax on bunker fuels, the high-viscosity fuel used to propel large cruise ships, container ships, and tankers (Page 35)

- **Oil Rig Liability Fund**

Receipt of a portion of an oil company's savings from converting oil installations to reefs, instead of bringing the structures to shore for salvage (Page 36).

- **Fines**

Dedicating fines collected for illegal ocean activities to marine conservation (Page 37)

- **Mitigation**

A compensatory mitigation program applied to seagrasses, coral and oyster reefs and other marine or coastal environments (Page 38).

Case Study – Payment for Ecosystem Services: The New York City Watershed Program

The New York City model illustrates the cost-saving potential of implementing Payment for Ecosystem Services to fund watershed management, rather than incorporating traditional water-related filtration infrastructure. In order to comply with safe drinking water standards, the City of New York began looking for methods to improve water filtration deriving from three watershed sources, the Crofton, Catskills, and Delaware watersheds. The estimated cost to construct a new filtration plant to meet the City's drinking water needs exceeded $7 billion, with operating costs above $300 million (NYCDEP, 2010).

The high cost of implementing a filtration system led the City to look into watershed management as a method to reach the same drinking water quality outcomes. The program was developed to pay local landowners to establish and maintain Best Management Practices that would protect water quality and avoid the need to construct a new filtration plant. Paying for the maintenance of watershed services is much less expensive (less than $2 billion), maintains water quality more effectively, and produces additional benefits to the region (NYCDEP, 2010).

- **Payment for Ecosystem Services**

A market-based approach to assigning economic value to the services natural resources provide, where payments are made for natural resource performance (Page 39).

- **Nutrient Trading**

An environmental market that involves a voluntary exchange between a buyer and a seller of a unit of nutrient reduction (Page 41).

- **Blue Carbon**

Protecting mangrove, seagrass, and salt marsh habitats by assigning credits to their stored carbon and selling them on the carbon market (Page 42)

- **National Partnership Agreements**

Public-private partnerships to leverage funds for marine conservation (Page 43).

Case Study – National Partnership Agreements: Forever Costa Rica Partnership for Protected Areas

Forever Costa Rica is a nonprofit association developed by the Costa Rican government and its associates – The Nature Conservancy, the Linden Trust, the Moore Foundation, and the Walton Family Foundation. The aim of the partnership is to develop a sustainable funding source for protected-area expansion and management. The partners have a fundraising goal of $50 million. The funds will be invested and the earnings will be used to finance the project's recurring costs (Forever Costa Rica, 2011).

- **Targeted Government Efficiencies**

Streamlining and reconfiguring existing government programs to reduce programmatic costs and maximize existing federal dollars to increase positive conservation outcomes (Page 45).

During the brainstorming phase of the project, numerous innovative ideas from state, local, and international sources were also unearthed. Although not applicable to the federal scope of this project, a list of these other ideas may prove informative and can be found in Appendix C.

Assessment of Funding Ideas

The following charts display the funding mechanisms and revenue sources discussed in this white paper, based on their feasibility and the estimated timeframe to adopt the strategies. Each idea presented was run through the criteria and is depicted below in terms of high, medium, and low viability. Please note: the terminology for the

Table 2. Viability vs. Timeframe of Funding Mechanisms

	Viability*	Timeframe
Funding Mechanisms		
Trust Fund	High**	Medium
Revolving Loan Fund	High**	Medium
National Conservation Bond	High**	Long
Payment for Performance	High**	Long

**Viability: The overall feasibility of implementing the funding mechanism where High = Few obstacles to adoption; Moderate = Some obstacles to adoption; Low = Many obstacles to adoption*

*** Presumes a revenue source has been secured to seed and support the funding mechanism.*

Table 3. Viability of Revenue Sources

Revenue Sources		Evaluation Criteria					
		Financial	**Legal**	**Political**	**Social**	**Environmental**	**Timeframe**
Marine Industries	Tax on Imported Maritime Commerce	High	Moderate	Low	Moderate	Neutral	Medium
	Cruise Ship Environmental Fees	Moderate	Variable	Low	Moderate	Neutral	Medium
	Fees for Preferred Shipping Routes	Variable	Moderate	Moderate	Moderate	Neutral	Long
Fisheries and Aquaculture	Fees for Aquaculture in Federal Waters	Low	Moderate	Moderate	Moderate	Neutral	Long
	Seafood Excise Tax	High	Moderate	Low	Moderate	Neutral	Medium
	Fishing Stamp	Low	Moderate	Moderate	Moderate	Neutral	Long
Energy	Offshore Oil and Gas Revenues	High	Moderate	Low	Moderate	Neutral* Negative*	Long
	Offshore Renewable Energy Revenues	Moderate	Low	Low	Moderate	Neutral	Long
	Increased Tax on Crude Oil	Moderate	Moderate	Low	Moderate	Neutral	Medium
	Increased Federal Excise Tax at the Pump	High	Moderate	Low	Low	Neutral	Long
	Tax on Shipping Bunker Fuel	High	Low	Moderate	Moderate	Neutral	Medium
	Oil Rig Liability Fund	Variable	Moderate	Moderate	Moderate	Positive	Medium
Fines		Variable	Moderate	Low	High	Neutral	Short
Mitigation		Variable	Moderate	Moderate	High	Neutral	Long
Market-Based	Payment for Ecosystem Services	Variable	Moderate	High	Moderate	Positive	Long
	Nutrient Trading	Variable	Moderate	Moderate	Moderate	Positive	Variable
	Blue Carbon	Variable	Moderate	Low	Moderate	Positive	Long
National Partnership Agreements		Variable	High	High	High	Variable	Short
Targeted Government Efficiencies		Variable	High	High	High	Positive	Short

**The environmental impacts from offshore oil and gas may fall into either the "neutral" or "negative" categories. Their assignment will depend on the conditions placed on implementing a funding mechanism. See page 30 for more information.*

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rankings vary, however, overall, green indicates a higher viability ranking, yellow indicates a moderate viability ranking, and red indicates a lower viability ranking. Refer to Table 1 to review the terminology key for the charts.

Funding Mechanism Analysis Results

As shown in Table 2, the funding mechanisms reported in this document demonstrate a high level of viability if a revenue source can be identified and secured. The funding mechanisms are very different in nature and structure, and represent both traditional and innovative models of federal conservation funding. The most suitable mechanism will largely depend on the challenges addressed, the economic circumstance, and the political and regulatory environment.

Trust funds and revolving loan funds are traditional mechanisms frequently utilized for federal conservation financing. For these mechanisms to become truly viable, first and foremost, a revenue stream must be identified, secured, and set in motion. The structure of the mechanisms is not controversial in itself. However, when proposed in Congress, oftentimes the associated revenue streams create divisiveness, and as a result, resolution and establishment of the funds seldom occur.

As an alternative to traditional mechanisms, two innovative concepts – national conservation bonds and payment-for-performance systems – provide unconventional, yet promising approaches to marine conservation finance. These concepts are fueled by fees or government cost savings, respectively. The timeline to implement any of these mechanisms is expected to be long, in part due to regulatory and legislative hurdles. Emerging projects, both domestic and international, continue to demonstrate positive outcomes, garnering increasing support for these concepts.

Revenue Source Analysis Results

The revenue sources found herein range from revenues derived from government efficiencies, pooling of resources through partnerships, charges to large commercial industries, market-based user fees, and taxation.

The most feasible revenue sources within a short timeframe are the development of targeted government efficiencies and the establishment of national partnership agreements.

Targeted governmental efficiencies (as explained in *Appendix B*), with their premise of better management of existing dollars to produce greater conservation outcomes, are a very attractive option regardless of the economic situation, though this option is particularly palatable during hard times. Of particular interest is the potential reallocation of Natural Resource Damage Assessment (NRDA) settlement funds to areas of greatest conservation outcomes for the impacted natural resource. In many cases, the adjustments needed for cost savings are permitted under existing regulations and statutes.

Partnerships are good investment mechanisms for governments, foundations, and private entities to leverage funds from additional sources. They are a powerful tool to garner support from potential new audiences and mobilize resources and personnel with little to no legislative or executive hurdles.

Mitigation and market-based approaches, although on a longer timeframe, represent emerging models that show significant promise for revenue generation and cost-savings when compared to traditional environmental solutions. There is building momentum from pilot projects and fully-operational mitigation and market-based projects that demonstrate the benefits of private funding and

innovative methods to addressing a conservation problem in a federal framework.

Revenue sources derived from shipping, ports, fisheries, and energy industries remain possible opportunities. The key to accessing these sectors lies in working with industry early in the mechanism development process and incorporating the sectors' needs into a mechanism. Lessons can be learned from earlier efforts such as the proposed CARA legislation of 2000. During the CARA effort, there was strong and regular communication among pro-CARA coalition members and strong engagement by large businesses, industries, and interest groups to legitimize and move forward the endeavor.

A thorough description and feasibility analysis for the funding mechanism and revenue sources is provided in *Appendices A and B*.

Observations

As part of the project, the Conservancy held roundtable sessions and meetings with leading sector experts to collect and validate information gathered on marine conservation finance options. Throughout these sessions and meetings, it became clear that looking solely at federal funding ideas may not be the optimum approach for increasing investments in our oceans and coasts. While the conservation community is not giving up on the possibility of identifying funding at the federal level, the economic and political situation may lead the focus to shift towards identifying funding for states, counties, and localities. The more local the project, the more support it tends to garner, particularly bipartisan support. However, even among coastal communities, support is contextual and depends on whether funding is perceived as "new" money or will compete with funds for other economic and community purposes.

The Need for Unity and Action

The search for marine funding opportunities has been a recurring endeavor (Rubin and Alderson, 1988; Spergel and Moye, 2004). The challenges with implementing funding strategies do not stem from a lack of ideas; rather, the marine community and partners must coalesce around an idea in order to create the momentum to push marine financing forward.

The marine community represents diverse niches, making it difficult to center around one common effort. The next step in funding marine efforts involves addressing the human component – setting aside differences to unify and take action to incite change.

The obstacles and limitations associated with implementing a marine conservation funding mechanism do not stem exclusively from external forces. The marine conservation community needs to broaden its own view to include innovative solutions to address longstanding conservation funding needs. Historically, the community has not been committed to working with non-traditional partners, a step identified in this study as essential for achieving success. Similarly, the community needs to expand its array of strategies for addressing conservation funding issues, from engaging with agencies in order to create better efficiencies to pushing for innovative funding mechanisms instead of relying upon traditional mechanisms and approaches.

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Chapter 3: Conclusions

The most promising ideas tend to be those that exhibit a direct nexus to the ocean and coastal environment, present little political or industry opposition, and can be implemented in a relatively short timeframe. As such, the following funding mechanisms and revenue sources show the greatest potential for action on the short or medium term.

- **Trust funds and revolving loan funds** are well known funding mechanisms frequently used to disburse funds for conservation purposes. They can be implemented in a relatively short timeframe, pending the identification of a suitable revenue source to propel the fund.
- **Targeted government efficiencies** are feasible in great part due to the potential cost reductions and maximization of federal dollars by streamlining or altering existing federal programs. Targeted government efficiencies do not necessarily require "new" money or necessitate Congressional approval, allowing for faster implementation.
- **National partnership agreements** present opportunities to team with non-traditional groups and organizations and leverage existing conservation dollars. Few obstacles limit the possibilities of public-private partnerships; they are still a largely untapped market. Encouraging further public-private partnerships could lead to major innovation in the ocean and coastal environment.

In the longer term, the marine community should work together to incubate and promote innovative ideas that may flourish as they become increasingly proven and mainstream. The following funding mechanisms and revenue sources show great potential as a long term investment of time and energy.

- **Payment-for-performance models** encourage private investments and offer an efficient way to achieve environmental results.
- **National conservation bonds** would enable investors to both profit financially and help preserve ocean and coastal resources. The nature of these bonds precludes fund uses for other purposes, which helps to increase the bond holders' confidence and directs money to its intended target.
- **Payment for ecosystem services,** if designed and implemented well, offer great potential for protecting marine ecosystems. Putting a value on a good helps provide an incentive for people to produce it, and in the case of ecosystem services, conserve it. Payment for ecosystem services offers a means of appropriately valuing ecosystems in an innovative and flexible way, and it presents policymakers another tool to deliver policy.

The obstacles to accessing revenue from shipping, ports, fisheries, and energy industries are not insurmountable. However, significant coalition building with conservation groups and industry alike needs to occur in order to develop a funding mechanism that incorporates the needs of all stakeholders.

Now that several potential sustainable mechanisms and revenue sources that show promise on a federal scale have been identified, the following ideas can be used to establish a process to foster implementation:

(1) Identify the full range of ecological problems the mechanism would address and the root cause of those problems.

(2) Establish how to best solve the problems that are urgent ecological and public concerns, develop potential solutions, and determine their costs over the short and long terms.

(3) Match the needs of the potential solution with the appropriate funding mechanism and revenue source(s). Establish a clear connection between the revenue generated and how it will be used.

(4) In the case of the introduction of an innovative funding mechanism, implement pilot studies that have the potential to be scaled up.

(5) Conduct outreach and education to stakeholders, the public, federal agency staff, and members of Congress, form a coalition of advocates to shepherd the idea through the necessary steps, and build a campaign strategy to persuade and encourage support for the idea.

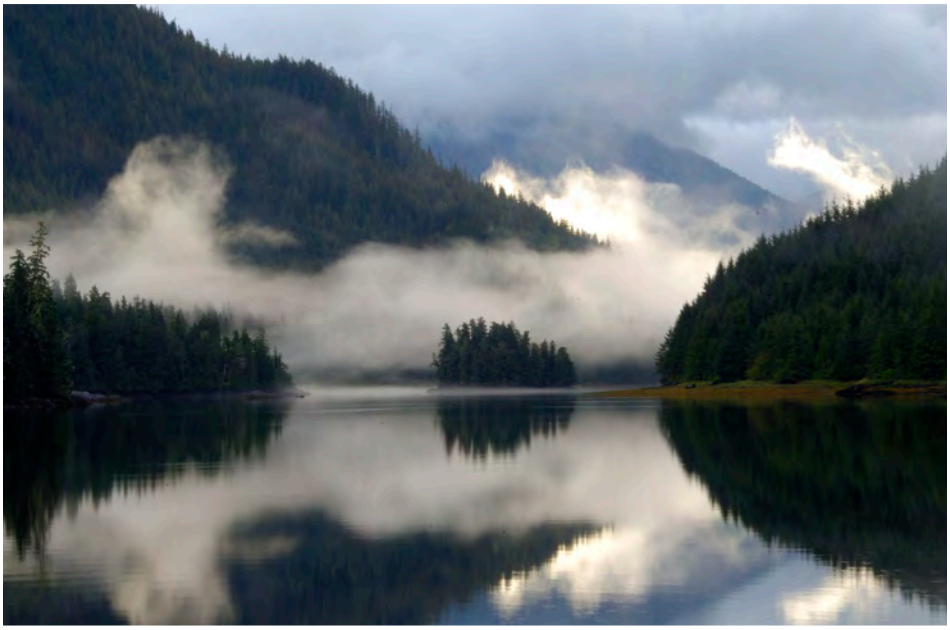
(6) If legislative action is required, engage select elected officials to assure their support. A fundamental aspect to any sustainable funding mechanism is that it will take political will to institutionalize many of the mechanisms identified.

(7) Getting a mechanism in place does not mean that the funding to conservation automatically happens, as evident in numerous examples over the last thirty years including the Land and Water Conservation Fund and the Harbor Maintenance Trust Fund. With these funds, monies are not fully appropriated to conservation and dredging, respectively, and are instead deposited into the Treasury to offset the deficit. A long term and sustained coalition is needed to ensure that Congress and the Administration follow through and funding continues to go towards its intended purposes.

Final Remarks

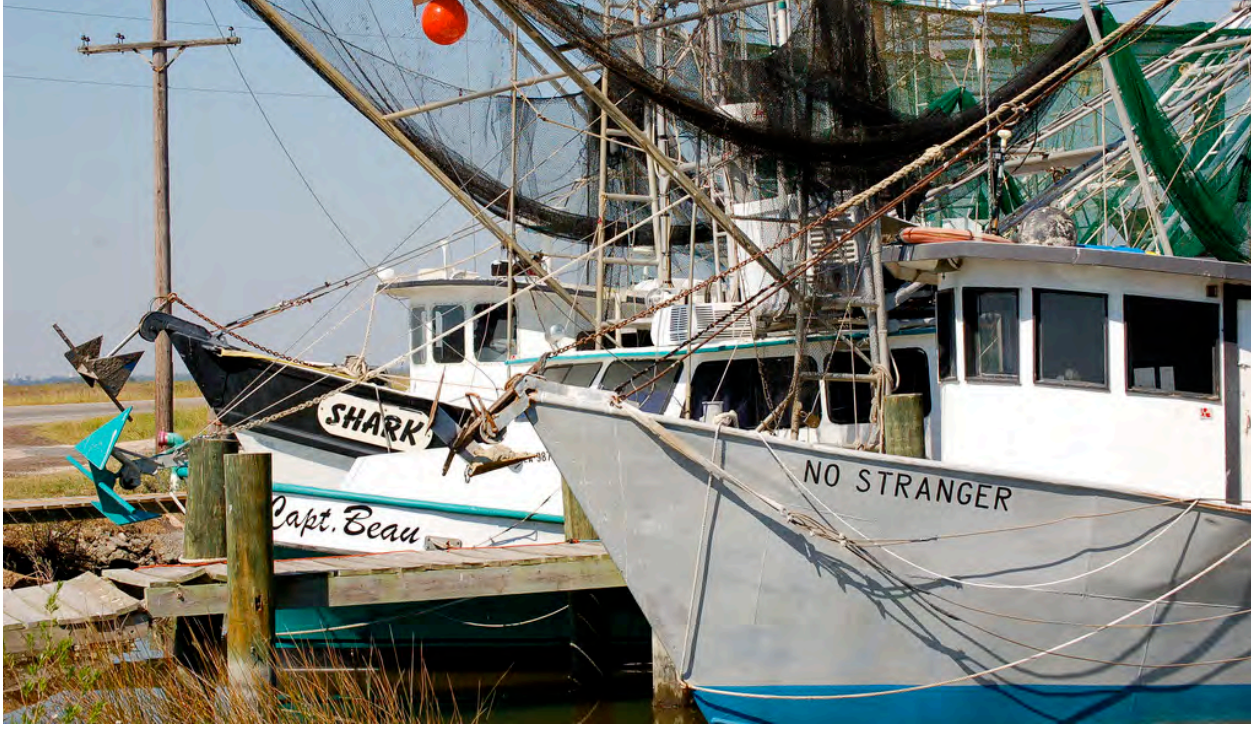
The marine environment can't wait for the perfect funding mechanism and revenue source to fall into place. Instead, the conservation community must create the needed coalitions and cultivate action. The ideas in this white paper represent a starting point for more in-depth discussions and analyses. Two good places to start could be demonstrating the possibilities of targeted government efficiencies and market-based opportunities such as payment for ecosystem services.

Establishing sustainable conservation financing for our oceans and coasts is critical to balancing environmental needs with human uses. Conserving these ecosystems through adequate funding ensures that they maintain the ability to sustain people and nature now and into the future.



Appendix A:

In-Depth Look at Funding Mechanisms



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Appendix A: In-Depth Look at Funding Mechanisms

Trust Funds

Federal trust funds are accounting mechanisms used to link receipts with the expenditures of those receipts, usually dedicated for a specific purpose. The federal government has custody of the funds as well as the earnings of most federal trust funds. Three types of trust funds are common:

- **Endowment funds,** in which revenues are drawn from fund income only, while simultaneously trying to maintain or increase capital;
- **Sinking funds,** from which all assets are liquidated over a given period of time; and
- **Revolving funds,** designed to receive regular replenishment from various sources (Flores et al., 2008).

Trust funds can be established as public funds, private funds, or a combination of the two. In total, the United States federal budget has more than two hundred public trust funds. Among the largest trust funds are Social Security and Medicare.

Some states have public/private hybrid trust funds, like the Wyoming Wildlife and Natural Resource Trust (State of Wyoming, 2011). It is funded by legislative appropriations; private individuals and corporations may also make contributions to the trust fund.

With adequate capitalization and effective management, trust funds are viewed as desirable mechanisms for financing conservation because they are, by definition, a sustainable structure. Trust funds are a favorite and reoccurring idea with the ocean conservation community; however, problems with trust funds arise from a lack of political will (e.g., CARA and NEO), disinterest amongst agencies to manage the account, and difficulty in accessing funds from the Treasury.

The designation of a fund as a "trust fund" does not establish how the spending of a fund is managed. Although the federal budget distinguishes between general federal funds and trust funds, this designation does not guarantee that money will go towards it its intended purpose. Instead, the budget is divided into "discretionary" and "mandatory" categories, and those determine how a fund is controlled: mandatory funds are automatically allocated and discretionary funds require annual appropriations.

Oftentimes, trust funds may earn interest on balances. The extent to which funds may earn interest and the rate at which interest is earned are determined by Congressional authorization. Most of the trust funds are invested in special, nonmarketable Treasury securities. In some cases, laws may permit that the interest earned by one fund's investment be used for a different purpose (GAO, 2001).

A constant concern with trust funds is the inappropriate diversion of funds for purposes other than what was intended. Since the cash from trust funds is commingled

with other receipts in the Treasury, it is often used to pay other federal expenses. Surpluses from trust funds are frequently lent to the general fund of the Treasury, and the trust funds, in many cases, are given special nonmarketable Treasury securities in return. These act as IOUs that can be redeemed in the future. However, if surpluses are inadequate to redeem the securities, the government then needs to borrow more from the public, raise taxes, reduce spending, or a combination thereof; otherwise, the funds cannot be redeemed and those dedicated funds are, in effect, unavailable for the purposes for which they were created (GAO, 2001).

Case Study – Federal Trust Fund: Dingell-Johnson Sport Fish Restoration Program and Wallop-Breaux Reauthorizations

The Dingell-Johnson Sport Fish Restoration Program is a cooperative effort between federal and state agencies, anglers, boaters, and the sport fishing industry. The Program is one of the nation's most effective "user-pay, user-benefit" programs. The Program was established in 1950 by the Dingell-Johnson Act, which implemented an excise tax on certain fishing equipment to fund sport fishing projects throughout the United States. Later amendments to the Dingell-Johnson Act, from Senators Wallop and Breaux, expanded the range of items that fall under the excise tax to include motorboat fuel, imported watercraft, and added fishing tackle items; increased the program's funding; and established the Aquatic Resources Trust Fund (Virginia Department of Game & Inland Fisheries, 2011).

An excise tax of 10 percent applies to the sale price of fishing rods, poles, reels, and their components; tackle; and other fishing supplies. There is a 3 percent tax on the sale price of electric outboard boat motors. An additional tax is imposed on motorboat fuel and small engine fuel. The monies generated are deposited in the Treasury and allocated to states for sport fishery restoration, habitat conservation, boat safety, and boating access and facilities projects (USFWS, 2011c).

The Dingell-Johnson Sport Fish Restoration Program's actual budget in 2009 was $497 million, with $402 million in payments to states (USFWS, 2011b).

The establishment of a federal-level trust fund dedicated to ocean and coastal conservation is a challenging feat. Attempts to create an ocean and coastal trust fund have failed for over twenty years, in great part because of divisiveness in identifying and securing a sustainable revenue source.

The following are important elements to increase the feasibility of adopting a federal-level marine conservation trust fund, as determined during roundtable sessions and expert meetings:

1. Engage a diverse group of partners, including industry, trade groups, the fisheries sector, and other interests, to build support and provide greater political clout than efforts pushed only by environmental groups. Overt backing from commercial sectors and other non-environmental interest groups is vital to overcoming political challenges and thus the successful enactment of such legislation. The group of partners would ideally come together in the initial phase, and together would develop a common goal and create a mutually agreed upon approach to achieving that goal. Having the group that pays for the program involved and supportive is critical to gaining public and political support. The Dingell-Johnson Sport Fish Restoration Program is a good example of a "user pay, user benefit" model.
2. Make a clear connection between the revenue source used to support the trust fund and how that money will be used (e.g., taxes on sport fishing equipment to support restoration of sport fish).
3. Select a suite of potential revenue sources to generate income for a trust fund, if possible. Diversifying the revenue sources means the burden to generate monies for the fund does not lie on a single sector or industry. Additionally, this creates stability in the fund if revenue from one source decreases.
4. Develop an advocacy plan that articulates the problem well and identifies specific actions to generate solutions.
5. If legally possible, embed safeguards in the legislation language to ensure regular, full funding of the trust fund.

The appropriate choice of revenue source will greatly depend on the targeted goal. For example, a revenue source suitable for fisheries research would differ from a revenue source suitable for coastal adaptation. See Table 3 to identify revenue sources based on their feasibility and timeframe for implementation.

Federal Revolving Loan Funds

A revolving loan fund consists of a pool of federal funds that recycles money as loans are repaid. Loan recipients are typically states, local governments, communities, and nonprofit organizations, and loan repayments are recycled back into the program to fund additional projects.

Case Study – Federal Revolving Loan: Clean Water State Revolving Fund

The Clean Water State Revolving Fund (CWSRF) has gained widespread recognition as a program that provides low-interest financing to fund a wide variety of water quality infrastructure projects. Funds may be used for nonpoint-source pollution management, watershed protection and restoration, estuary management projects, and traditional municipal wastewater treatment projects.

The CWSRF is an independent and permanent source of low-cost financing. Funds for the CWSRF programs are provided through federal government grants and state matching funds (20 percent of federal). As the loans are repaid, money becomes available to be used again for new financing – a true revolving fund. The total funds available to the program to date have been over $74 billion, providing over 24,688 low-interest loans nationwide (EPA, 2011).

Existing revolving loan programs, such as the Clean Water State Revolving Fund (see case study above), allow states a certain level of flexibility and innovation with the disbursement of their funds. Each state sets its own loan terms, interest rates, and repayment methods. States may target their funds to provide assistance to the communities or the water quality priorities of greatest need.

Interest rates for federal revolving fund loans average 2.2 percent, lower than market rates (EPA, 2011). While below market interest rates are designed to give borrowers a financial advantage, there are some pitfalls. Revolving loan funds are typically neither growing nor self-sustainable; most loan programs require periodic injections of new federal funds. Additionally, inflation can steepen the decline of a loan program's capital base, leaving few funds to cover operating costs (GAO, 2006).

The following are important elements to increase the feasibility of adopting, and successfully running, a federal-level marine conservation revolving loan fund, as determined during roundtable sessions and expert meetings:

1. Key to a successful revolving loan program is pairing a loan program with a marine or coastal industry or other revenue source to infuse the loan fund with initial seed funding. Although the principle of a revolving loan fund is one where repayments to the loan are recycled, a steady infusion of money is essential, especially in the initial phase when loan repayments are not yet feeding the fund. This revenue source should be sustainable and steady.
2. There needs to be a mechanism by which the state, municipality, or nonprofit organization is able to repay the loans. This can be achieved through a user or access fee; a state, local, or special tax; a surcharge to utilities or other service; or other traditional or innovative financing structure.
3. Leverage additional funds whenever possible by partnering with other funding sources, such as banks, nonprofit groups, local governments, and state agencies.

Similar to the trust fund model, the appropriate choice of revenue source for a marine conservation revolving loan fund will greatly depend on the targeted goal. Please see Table 3 to identify potential revenue sources based on their feasibility and timeframe for implementation.

Payment for Performance

An environmental payment-for-performance fund is a form of outcomes-based contract in which the public sector commits to pay for significant improvement in environmental outcomes. The use of this mechanism for environmental issues is modeled upon Social Impact Bonds used in the United Kingdom. Social Impact Bonds are not bonds in the conventional sense. While they operate over a fixed period of time, they do not offer a fixed rate of return. Repayment to investors is contingent upon specific social outcomes being achieved.

Through Social Impact Bonds, private investment is used to pay for interventions for repeat offenders who are doing short-term prison sentences. The interventions are delivered by service providers with a proven track record in rehabilitation, drug treatment, and other social services. Financial returns to the initial investors are made by the public sector on the basis of improved social outcomes (payment for performance). If outcomes do not improve, then investors do not recover their investment.

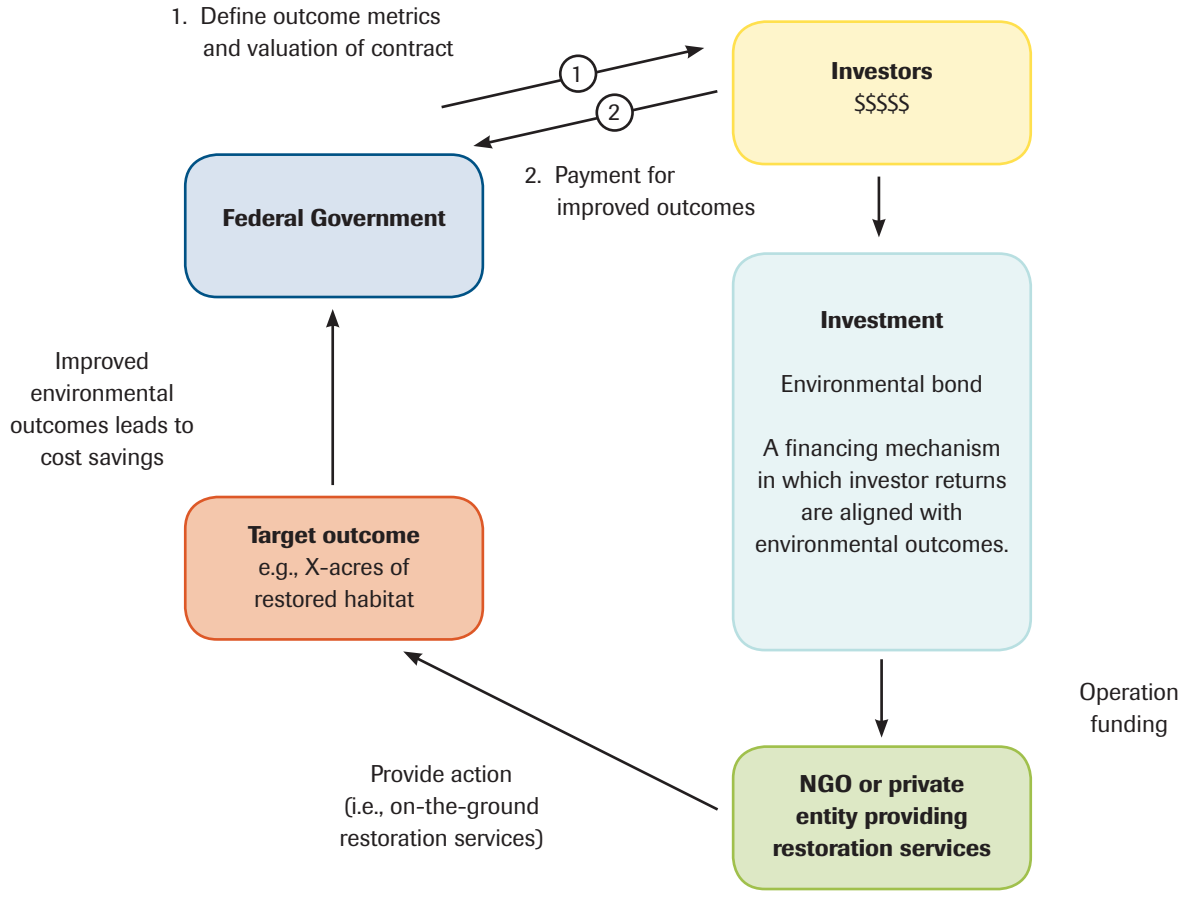
Social Impact Bonds provide upfront funding for prevention and early intervention services, and remove the risk that interventions do not deliver adequate outcomes from the public sector. The public sector pays if, and only if, the intervention is successful.

A diagram of the flow of money and services can be seen in Figure 1. The figure shows an example of the Social Impact Bond model applied to environmental restoration. Following a contract agreement between the public and private sectors, a service provider (a nonprofit organization, community group, or company specializing in environmental restoration), is paid by the investors to provide the on-the-ground restoration activities and achieve the targeted outcome (e.g., restoring x acres of habitat). If the performance measure is reached, a portion of the governmental cost savings achieved through the contracting of the service is paid out to the investors, as determined in the initial public-private agreement.

This payment-for-performance model is well suited to environmental issues, and is an innovative way of attracting new investment around outcomes-based contracts that benefit taxpayers and the environment alike. An environmental payment-for-performance setup could attract private investment in service providers (nonprofit organizations, private companies, entrepreneurs, and community groups) to try out solutions to environmental problems. If the solution meets the predetermined metrics defined for the problem, the federal government would pay those who invested in the solution a share of the cost savings. In this case, the federal government would not spend anything until it gets the results determined in the contract. And "results" means cost savings as well as meeting environmental outcomes. The risk is placed on the investors, not the federal government, if the outcomes are not met (Jupp, 2011). However, this particular model does imply ongoing public funding for the program in question. The benefit is in the savings difference between what the program would have cost through direct government service versus what it costs through pay-for-performance contracting. Either way, the contract depends on ongoing appropriated public funding, and is thus very subject to the vagaries of budget ups and downs.

The following diagram shows a proposed payment-for-performance structure involving restoration activities.

Figure 1. Restoration-based Environmental Payment-for-Performance Structure



(Diagram adapted from Jupp, 2011)

The payment-for-performance environmental model may be best suited for projects where results are quantifiable, such as acreage of habitat restoration or volume of emission or nutrient reduction, among others.

An important step in establishing an environmental payment-for-performance model is developing a feasibility study to ensure better outcomes and value. Items to identify include the targeted environmental outcome, the existing gap in service, the potential federal government savings, potential investor interest, and contract deliverables and timeline (Jupp, 2011).

A willing pool of investors must be identified. This new group of investors is motivated by environmental as well as financial returns, and has a strong sense that the private sector can bring efficiencies to tackling existing environmental problems. Environmental investors can be private individuals or come from entities or nonprofit grant-making organizations, as they often have prior experience with funding projects that address an ecological problem. These groups may also bring significant expertise to the project and can directly engage with the organization delivering the environmental service.

While this potentially offers an efficient way to achieve environmental results, it still assumes public funding (provided to private environmental entrepreneurs for performance). Thus, it still confronts upfront challenges regarding the public appetite for spending toward the purpose in question.

National Conservation Bond Initiative

Unlike a payment-for-performance bond model, a national conservation bond would resemble the traditional general obligation (GO) bonds issued by states and municipalities. A GO bond is secured by a government's pledge to use legally available resources, including tax revenues, to repay bond holders.

A similar structure to the Australia Coral Reef Bond could be adopted in the United States. The issuance of a national conservation bond would require authorization from Congress. It would also require a taxation or fee structure designed to pay out the bond at maturity. Suitable revenue source pairings could include: fees for preferred shipping routes, port-based fees, or charges assessed on the fisheries and energy sectors.

This national conservation bond would function like almost any other government bond. Bond holders would receive interest regularly over a period of years and then be paid in full upon bond maturity. Bond interest rates are set by the market and become fixed when they are first purchased.

Case Study – A National Conservation Bond Initiative: Australia's Great Barrier Reef

A major nationally-focused marine conservation bond initiative now under way in Australia promises to direct much-needed funding to adaptation and mitigation research along the Great Barrier Reef. Spearheaded by the Great Barrier Reef Foundation, Australia's Coral Reef Bond involves strategic engagement with the private sector.

In August 2009, the Foundation contracted with Oxford Economics to conduct a study to define the economic value of the Reef. Their assessment of the Reef's value to the Australian economy was an astounding AU$51 billion. Furthermore, their study indicated that if there were to be a catastrophic bleaching event, the value of the Reef would decrease by 73 percent nationally; and in certain tourism-heavy localities, decrease by as much as 90 percent.

In light of these findings, the Foundation teamed with Goldman Sachs and KPMG to develop a revenue stream to support Reef research. The proposed bond model calls for the federal government to collect a small surcharge from Reef tourism users and vessels that go through the Reef.

The fees collected through this federal structure would be channeled solely to the Foundation. It was identified early on in the mechanism development phase that to ensure the participation of industry and commercial interests, the monies would ultimately need to end up at the Foundation for management.

The bond is guaranteed by the Australian Finance and Investment Corporation, a government-owned body. Goldman Sachs' role is to raise the bond and managing the bond investments. This initiative is a five-year bond expected to generate AU$50 million. Additionally, partners (scientific organizations, engineers, outreach groups, etc.) have agreed to match every dollar received with an equivalent in-kind contribution (Hanratty, 2012).

A national conservation bond would enable investors to both profit and help to preserve ocean and coastal resources; this combination is likely to be attractive to investors looking to "green" their investment portfolio. The nature of these bonds precludes fund uses for other purposes, which helps to increase the bond holders' confidence.

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Appendix B:

In-Depth Look at Revenue Sources

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Appendix B: In-Depth Look at Revenue Sources

Tax on Imported Maritime Commerce

Viability	
Financial	High
Legal	Moderate
Political	Low
Social	Moderate
Environmental	Neutral
Timeframe	Medium

Ad valorem taxes are currently assessed on imported maritime commerce, with funds directed to the Harbor Maintenance Trust Fund (see case study at right). An ad valorem tax is a type of tax which is levied on property according to its value. A new or increased ad valorem tax, even at a very low percentage rate of the value of cargo imported to the United States, could generate a very large and stable revenue stream.

Case Study – Tax on Imported Maritime Commerce: Harbor Maintenance Trust Fund

The Harbor Maintenance Trust Fund revenues are generated through the Harbor Maintenance Tax to recover harbor operation and maintenance costs, in particular dredging. The tax is levied on shippers using United States ports. The tax is assessed at a rate of 0.125 percent of cargo value ($1.25 per $1,000 in cargo value) (Marlowe &Company, 2011).

On paper, the fund has a surplus $5.65 billion (RAMP, 2008). However, those funds are not fully appropriated to dredging and are instead deposited into the Treasury to offset the deficit.

Determination of Feasibility	
Advantages	**Disadvantages**
• With a large volume of cargo imports, even a small value-based fee could generate large income. • The public generally accepts fee structures where the user pays. • There are no added environmental impacts with this revenue source. • With an existing framework to collect a tax on the percentage of cargo value, there may be fewer legal obstacles than from a new mechanism.	• The shipping industry has a strong lobby, and there may be significant political resistance depending upon the idea and its benefits.

Cruise Ship Environmental Fees

Viability	
Financial	Moderate
Legal	Variable
Political	Low
Social	Moderate
Environmental	Neutral
Timeframe	Medium

The cruise industry is a sector of tourism with a rapid rate of growth combined with the tendency to concentrate near ecologically dynamic coastal environments. Environmental fees on tourism deserve attention within tourism policy, due to the dual function of environmental protection and revenue generation they can provide.

One way to put into action a cruise ship environmental fee is through the implementation of an arrival fee per capita for cruise ship passengers at each port of call. Implementing a new natural resources fee can be used to offset ship-related impacts at ports and harbors, as seen in the following case study.

Case Study – Cruise Ship Environmental Fees: Caribbean Cruise Industry Fees for Waste Disposal

A number of Caribbean countries have asserted their right to impose regulations and fees on the cruise industry. In 1996, six Caribbean countries (Antigua, Dominica, Grenada, St. Kitts, St. Lucia, and St. Vincent) jointly decided to charge a $1.50 per passenger "cruise ship waste disposal fee" to finance environmental cleanup and conservation (The Nature Conservancy, 2004). St. Lucia alone receives approximately seven hundred thousand cruise ship visitors per year (Caribbean Business Journal, 2011). Implementing the surcharge quickly adds up to over $1 million annually for conservation activities in St. Lucia.

Determination of Feasibility	
Advantages	**Disadvantages**
• With a large number of cruise ship tourists, a small fee could generate significant revenue. • The public generally accepts fee structures where the user pays. • There are no added environmental impacts with this revenue source.	• The implementation of a cruise ship fee could be applied at the federal, state, or local level. Therefore, it is difficult to determine legislative obstacles that may be faced. • The cruise ship industry has a strong lobby, and there may be resistance. • Many of the largest cruise line companies are registered in countries outside of the United States in order to avoid regulations.

Fees for Preferred Shipping Routes

Viability	
Financial	Variable
Legal	Moderate
Political	Moderate
Social	Moderate
Environmental	Neutral
Timeframe	Long

Shipping vessel companies rely on favorable climates, smooth seas, and efficient routes to effectively and prosperously deliver goods across the globe. Of all the variables that go into shipping profit margins, the latter is the only one under human control. Taking a shorter, more direct route to access port can oftentimes cut days in the delivery schedule, resulting in significant cost savings.

Implementing a premium for preferred commercial shipping routes could bring satisfaction to the shipping industry and open up an entirely new and innovative source of revenue for marine conservation.

The preferred shipping route concept could emulate High Occupancy Toll (HOT) lanes. HOT lanes are tolled lanes that operate alongside existing highway lanes to provide users with a faster, more predictable travel option.

Ground transportation HOT lanes require single-occupant vehicles to pay a toll that varies based on demand, called congestion pricing. The tolls change throughout the day according to real-time traffic conditions in order to manage the number of cars in the lanes to keep them less congested.

A marine shipping HOT lane could either emulate this variable toll rate, based on demand, or it could be a straight set fee as is the case in Australia's Great Barrier Reef (AU$1,000 fee for a vessel to cross the Reef, rather than circumvent it).

Determination of Feasibility	
Advantages	**Disadvantages**
• A shipping lane surcharge of minimal cost could generate large revenue, though the national annual revenue would greatly depend on the number of HOT shipping lanes adopted and the fee applied to access them. • Efficiency in shipping is beneficial to the industry and the economy. • Shorter routes could mean reduced emissions. • Industry support for the fee would be contingent on whether new routes for faster shipping would be available. • May face little political opposition, especially if the industry is supportive. • May be viewed as a win-win by the shipping industry and conservation alike.	• Creating shipping lanes in or near protected areas increases risk of impacts to those areas and resources. • Implementation may be on a long-term timeframe; as route studies, fee structures, outreach to the shipping industry, and establishment of the system would all take some time. • A charge for the use of existing routes would not be viewed favorably by the shipping industry.

Fees for Aquaculture in Federal Waters

Viability	
Financial	Low
Legal	Moderate
Political	Moderate
Social	Moderate
Environmental	Neutral
Timeframe	Long

Currently the United States imports 84 percent of its fish (NOAA, 2008). To increase domestic production, NOAA and the Department of Commerce recently issued new policies intended to open up federal waters to fish and shellfish farms. Currently, most United States marine fish and shellfish farms are located in state waters, and none exist in federal waters. The opening and leasing of federal waters would present new opportunities to develop sustainable revenue sources through lease sales, permits, or other fees. Another option could emulate the oil and gas industry's Oil Spill Liability Tax on crude oil and impose a per-unit fee on aquaculture production.

Determination of Feasibility	
Advantages	**Disadvantages**
• The introduction of aquaculture to federal waters is an emerging industry; therefore the potential exists to shape the revenue structure early. • Creates job growth in the United States economy. • Shifts the seafood trade imbalance.	• Aquaculture is a marginally profitable industry, and the demand to expand to federal waters is not substantial. Some question whether such fees could amount to significant revenue, especially given the potential risks and the impacts on wild fisheries in some cases. • The technology to enable profitable production in federal waters has not yet been established. • Support for the implementation of an aquaculture-based revenue source can be misconstrued as encouragement of increased aquaculture development. • Environmental impacts from aquaculture expansion into federal waters can be significantly higher than what the revenue will be able to mitigate.

Seafood Excise Tax

Viability	
Financial	High
Legal	Moderate
Political	Low
Social	Moderate
Environmental	Neutral
Timeframe	Medium

An excise tax in the United States is an indirect tax on listed items. Excise taxes are collected by a producer, wholesaler, or retailer, and are often hidden within the price of a product rather than being itemized, as is the case with a state or local tax.

Americans consume 4.9 billion pounds of fish and shellfish per year (NOAA, 2011b). With the implementation of an excise tax either at the wholesale or retail level, a significant funding stream can be generated without the need to implement a high fee.

To minimize tax accounting complications, excise taxes are usually imposed on quantities like gallons of fuel, gallons of wine or drinking alcohol, packets of cigarettes, etc., and are typically paid initially by the manufacturer or retailer. All excise taxes are, of course, passed on to the consumer.

As an example, if an excise tax were implemented on fish and shellfish on a per-pound basis, at a mere $0.05 per pound, $245 million per year would be generated. At $0.10 per pound, $490 million would be generated.

Case Study – Federal Excise Tax: Air Transportation

The federal passenger air transportation excise tax (commonly referred to as "ticket tax") is imposed on the amount paid for commercial air transportation. When a person purchases a ticket for air transportation, the airline collects the federal passenger air transportation excise taxes from the purchaser and later pays the collected amount over to the IRS. The tax includes:

- *A 7.5 percent tax on the base ticket price;*
- *A domestic segment tax of $3.70 per person per segment (a single takeoff and single landing);*
- *An international travel facilities tax of $16.30 per person for flights that begin or end in the continental United States, or $8.20 per person for a flight that begins or ends in Alaska or Hawaii; and*
- *A 6.25 percent tax on the amount paid for transporting property (cargo) by air.*

The money captured from these charges, along with a federal excise tax on aviation fuels, is directed to the Airport and Airway Trust Fund. This trust fund is used to support the activities of the Federal Aviation Administration (FAA). At the beginning of fiscal year 2011, the trust fund had a cash balance of $9.4 billion (FAA, 2011). This fund, in effect, suffers from the same challenges as many other trust funds where funds are collected (and credited to the Treasury) but are not fully allocated to the purposes for which the taxes were intended.

Determination of Feasibility	
Advantages	**Disadvantages**
• The revenue generation potential of a federal excise tax on fisheries is significant. • The cost is spread out over a broad base of consumers. • Once the mechanism is established, the generation of revenue is almost instant, as the purchase of fish and shellfish products occurs on a daily basis. • It may be viewed positively, as the consumers buying fish are contributing to the preservation of the resource they are using ("user pays"). • Environmentally, this revenue source is anticipated to be neutral.	• It would require the excise tax to be incorporated into the federal tax code. • It may be construed as a deterrent to consumers choosing a healthy protein source, especially among lower income groups. • Increased prices may deter consumers from choosing certified-sustainable products, which are typically already at a higher price point. However, certified-sustainable products could have a lower tax than non-certified products to overcome this challenge. • In general, elected officials shy away from the implementation of taxes. • An excise tax that has a fixed amount (e.g., $0.05 per pound) does not keep up with inflation or the changing value of the commodity.

Fishing Stamp

Viability	
Financial	Low
Legal	Moderate
Political	Moderate
Social	Moderate
Environmental	Neutral
Timeframe	Long

Hunting and fishing stamps can be developed to support conservation efforts. One idea is to create a fishing stamp that emulates the "Duck Stamp" produced by the U.S. Fish and Wildlife Service.

The Duck Stamp is not a postage stamp, but rather a migratory waterfowl hunting license. At $15 apiece, the stamp also allows the purchaser to enter National Wildlife Refuges at no additional cost. The stamp is furthermore a collectable stamp, very popular amongst conservationists and stamp collectors. The Duck Stamp generates over $25 million dollars annually (USFWS, 2011a).

Determination of Feasibility	
Advantages	**Disadvantages**
• There may be little political opposition to a Fishing Stamp. • Good model of "user pays". • Unlike waterfowl hunting, marine recreational fishing participation continues to be high and is increasing in select regions. Catch and harvest recreationally is increasing and overtaking commercial catch for a number of species. • There are examples of viable fishing stamps (e.g., freshwater trout/salmon stamp) in several states.	• The revenue from the Duck Stamp is comparatively low. • Anglers who already pay for fishing licenses may oppose an added fee. • The timeframe to adopt such a stamp is over the long term.

Offshore Oil and Gas Revenues

Viability		
Financial	High	
Legal	Moderate	
Political	Low	
Social	Moderate	
Environmental	Neutral	Negative
Timeframe	Long	

Offshore oil and gas revenues present a significant potential source of conservation funding. Currently, numerous coastal and marine groups, forums, and leaders are focusing on offshore oil and gas revenues as a primary source of substantial future conservation funding. Although previous attempts to target offshore oil and gas for revenue generation have failed, the large revenue generation potential, coupled with the strong nexus to offshore environmental impacts, continue to make it an attractive option for further exploration.

Funding for conservation efforts could be established at several points within offshore oil and gas monetary transactions:

- Offshore lease sales, with a competitive "bonus bid" paid by the bidding company;
- "Rent" or a right-of-way fees per acre of space occupied by the installation;
- Royalties based on a percentage of the value of what is extracted (typically ranging from 12.5 percent to 18 percent, depending on the location and depth); and
- Annual rental fees of $15 per mile of pipeline.

Typically, offshore royalty and rent fees increase with the depth of water, strengthening the nexus between increased revenue and increased hazards to marine environment.

It is estimated that offshore oil and gas generate $5 billion in revenue annually in royalties alone (U.S. House of Representatives, 2011).

Case Study – Oil and Gas Revenue for Conservation: The Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) was created in 1965 to "safeguard natural areas, water resources and our cultural heritage, and to provide recreation opportunities to all Americans." LWCF is geared towards the development and preservation of national parks, as well as national wildlife refuges, national forests, rivers and lakes, community parks, and trails in all fifty states (LWCF Coalition, 2011).

LWCF uses revenues from offshore oil and gas to support land and water conservation. Nine-hundred million dollars in royalties paid by oil and gas companies drilling on the outer continental shelf (OCS) are put into the fund annually (Vincent, 2006). The aim of LWCF is to have a dedicated fund for the purpose of creating and conserving national parks, wildlife refuges, and other important natural areas, and to provide matching grants for state and local parks and recreation projects. However, much of the funding for LWCF is retained in the Federal Treasury, and only a fraction of its original amount is dedicated to land and water conservation. For example, the enacted funding for FY2008 was $155 million, FY2009 $180 million, and FY2010 $306 million – each year falling short of the $900 million originally approved by Congress (LWFC Coalition, 2011).

Determination of Feasibility	
Advantages	**Disadvantages**
• The offshore oil and gas industry is an established and certain revenue source. • Record-breaking profits are an indication that a large sum of revenue is generated from this industry. • No steep decline in demand is expected in the near future. • Models of existing revenue source structures, such as LWCF, can be emulated to provide a framework for the fund. • Once the fund is established, revenue is generated quickly, as it is an established industry with existing strong revenues. • This mechanism would not create any additional environmental impacts over those already incurred by the industry; the exception would occur if the fund were established based on an agreement to expand access to the outer continental shelf (see section on disadvantages).	• Engaging the offshore oil and gas industry would require cooperation of the industry as well as elected officials in Congress. • The implementation of a funding mechanism utilizing revenue from royalties, leases, or other sources would require legislative action. • Political will may be difficult to muster, as oil and gas companies have significant lobbying power in Congress. • The establishment of an offshore oil and gas industry-derived funding stream would occur over a long timeframe. • Some in the conservation community are concerned that the development of an offshore oil and gas-based revenue stream could create an incentive for increased drilling; creating a cycle where increased drilling provides increased funding for conservation defeats the purpose of the funding mechanism. • There is a history of sensitivities regarding revenue sharing with states. Producing states might see this as dipping into their revenue shares, unless it is set up to specifically direct funding to them. • Areas that have declined to host oil and gas production would benefit from a fee on an industry they refused to host. • If the implementation of a new revenue source is contingent on expanded exploration and access, the environmental impacts would be negative.

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Offshore Renewable Energy Revenues

Viability	
Financial	Moderate
Legal	Low
Political	Low
Social	Moderate
Environmental	Neutral
Timeframe	Long

Future offshore renewable energy projects, such as wind energy in the east and wave energy in the west, present an opportunity to look at revenue sources through structures similar to those applied to the oil and gas industry. Revenue generated could include transactions stemming from royalties, leases, permits, and transmission line right-of-way fees.

Determination of Feasibility	
Advantages	**Disadvantages**
• Offshore renewable energy is an emerging industry. Because of its nascent status, greater potential exists to shape the structure of a funding mechanism early. • The industry is expected to grow incrementally, and thus the fund would grow in tandem. • This revenue source itself would not create any negative impacts on the natural environment, as it would consist of charges to an activity that would occur regardless of whether a fee is implemented or not.	• Permitting requirements for offshore renewable energy may limit rapid development. • A fee may seem a disincentive to offshore renewable energy development. Currently, with a federal tax incentive to encourage wind development, it may be unwise to tax the industry now. • Legislative action is necessary to implement an offshore renewable energy-based revenue stream. • A fee on renewable energy may shrink profit margins to the point where development is no longer viable.

Increased Tax on Crude Oil

Viability	
Financial	Moderate
Legal	Moderate
Political	Low
Social	Moderate
Environmental	Neutral
Timeframe	Medium

Directing funds from a tax on crude oil, such as the Oil Spill Liability Tax, could present an avenue for funding for marine conservation. The Oil Spill Liability Tax is levied on each barrel of crude oil produced or imported into the United States. The tax is currently $0.08 per barrel and is slated to go up to $0.09 in 2017 (FPMA, 2010). Monies collected from this tax are put into the Oil Spill Liability Trust Fund (OSLTF).

The OSLTF was created in response to the Exxon Valdez spill. It has two major components:

(1) The Emergency Fund is available to federal on-scene coordinators to respond to discharges and for federal trustees to initiate natural resource damage assessments. The Emergency Fund is a recurring $50 million available annually.

(2) The Principal Fund balance is used to pay claims and to fund appropriations by Congress to federal agencies to administer the provisions of the Oil Pollution Act (OPA) and support research and development (U.S. Coast Guard, 2010).

At the current rate of crude oil production and import, every penny increase in the Oil Spill Liability Tax would generate an additional $69 million annually. The preemptive investment in ocean and coastal ecosystems could potentially reduce liability and costs associated with oil spill impacts and cleanup. Therefore, there is a strong argument for increasing the Oil Spill Liability Tax in order to have a dedicated portion directed to marine habitat enhancement and conservation.

Determination of Feasibility	
Advantages	**Disadvantages**
• Revenue generation derived from tax on crude oil is known, and can be calculated based on the number of barrels produced or imported into the United States, making it a predictable revenue source. • The structure of the fund is already in place in the form of the OSLTF. • This revenue stream would consist of an increase of an existing tax, which is potentially more palatable than the creation of an entirely new tax. • Increases to the Oil Spill Liability Tax have occurred periodically in the past, so there is an already established protocol on how the increases are implemented. • A per barrel tax (which falls on both domestic production and imports) is favorable over rents and royalties imposed on United States rigs in the few coastal states that host them. • This revenue source would not affect current practices and thus would not have added environmental impacts. It would increase a fee on preexisting practices.	• Like all other oil- and gas-based options, it is anticipated that resistance by the industry to the idea would be substantial. • Social barriers may exist due to the possible perception that the new fee would siphon funds from potential future oil spill cleanup.

Increasing the Federal Excise Tax at the Pump

Viability	
Financial	High
Legal	Moderate
Political	Low
Social	Low
Environmental	Neutral
Timeframe	Long

In the United States, federal gasoline tax receipts are frequently dedicated to transportation projects. However, with a percentage of that gasoline derived from offshore sources, it might be logical to direct part of this federal excise tax to marine conservation efforts. With an increase in the existing federal excise tax on gasoline, a percentage of the added revenue could be dedicated to marine conservation. The tax is currently 18.4 cents per gallon and the United States consumes 139 billion gallons of gasoline per year (USDOT, 2011b). With a 1/10 of a penny ($0.001) increase in the federal excise tax, the resulting revenue would be $140 million per year. With a ½ of a penny ($0.005) increase, the revenue would jump to $699 million annually.

Determination of Feasibility	
Advantages	**Disadvantages**
• Produces a very large and dependable funding stream. • The taxation system is already in place; if adopted the timeframe for this to begin generating revenue is relatively short. • May present a secondary environmental benefit, as gasoline usage usually decreases as the cost increases. • The higher cost of gasoline may also create an incentive for funding of innovative energy alternatives.	• An excise tax that has a fixed amount (e.g., $0.001 per gallon, as this one suggests) does not keep up with inflation or the changing value of the commodity. • Significant and lengthy legislative work is required to direct a portion to marine conservation. • Difficult to identify Congressional supporters of a gas tax increase. • Unlikely to receive public support for increased fuel prices. • Lacks direct nexus between gasoline and United States marine ecosystems. • Over the last few years, gas tax receipts have not been enough to cover the transportation program, and the highway trust fund has been shrinking to the point where it's near non-liquid or defunct. This may appear as competition for limited funds.

Tax on Shipping Bunker Fuel

Viability	
Financial	High
Legal	Low
Political	Moderate
Social	Moderate
Environmental	Neutral
Timeframe	Medium

The term "bunker fuel" refers to fuel that is used to propel ships. Bunker fuel is made from the very end products of the oil refining process, formulated from residues remaining from the primary distilling stages of the refining process. The residues are processed to produce a high-viscosity fuel used by large cruise ships, container ships, and tankers. Bunker fuel sulfur dioxide (SOx) and nitrogen oxide (NOx) emission concentrations are considerably higher than those of the more refined and lighter gasoline and diesel fuels (Smith et al., 2011). This grade of fuel is primarily used because large vessel engines are designed to handle bunker fuel and it is far cheaper due to limited demand (nearly nonexistent outside of the maritime industry).

Large modern container vessels can consume over two hundred tons of bunker fuel per day, though fuel efficiency varies by vessel size and other factors. In 2009, nearly seven thousand oceangoing vessels (primarily tankers and containerships) made over fifty-five thousand calls at United States ports (USDOT, 2011b). Therefore hundreds of millions of tons of bunker fuel are likely consumed by vessels landing at United States ports every year.

Even with a very minimal tax ($0.50 or $1.00 per ton), significant revenue could be generated. The tax could also include the amount of bunker fuel on a ship that was purchased at a foreign port before a United States landing.

Determination of Feasibility	
Advantages	**Disadvantages**
• A minimal fee produces a very large funding stream. • The higher cost of bunker fuel may create an incentive for funding of innovative energy alternatives. • Likely to receive support from the public, especially due to the "dirtiness" of the fuel, its emissions, and its impacts to the environment. • Direct nexus between bunker fuel and ocean users.	• An excise tax that has a fixed amount (e.g., $0.50 to $1.00 per ton, as this one suggests) does not keep up with inflation or the changing value of the commodity. • Significant legislative work is required to establish this revenue source. • Fuel accounts for 50 to 60 percent of the total cost of operating a vessel, therefore it is unlikely that the shipping industry would support an increase.

Oil Rig Removal Liability Fund

Viability	
Financial	Variable
Legal	Moderate
Political	Moderate
Social	Moderate
Environmental	Positive
Timeframe	Medium

Decommissioning oil and gas installations is expensive. Although costs vary widely, removing a complete platform in shallow waters such as the Gulf of Mexico can cost $15 to $20 million (Decomworld, 2009). Sometimes the removal of an entire installation is unattractive; in part because at the point of decommissioning the installation has become encrusted with living organisms and can provide habitat to fish, and the removal at the point of anchoring can destroy benthic habitat. This connection between fish habitat and oil and gas structures in the marine environment has garnered much interest and concern among fishermen, scuba divers, and coastal communities. However, significant liability issues exist with keeping rigs fully or partially in place, as they create hazards and risks to navigation and other ocean users. Meanwhile, if oil companies can either leave the installations in place or conduct only a partial removal, the cost savings could pay into a "liability fund" that would transfer the liability to the state. A portion of those funds could go into a mitigation fund, with the earnings from interest on the fund directed to conservation, restoration, and planning.

The premise of this idea builds upon the existing Rigs-to-Reefs program. This program is based on a federal policy used to convert outdated, nonproductive offshore oil and gas structures to designated artificial reefs. Under Title II of the National Fishing Enhancement Act of 1984 (P.L. 98-623), the National Marine Fisheries Service developed and published a National Artificial Reef Plan (BOEMRE, 2010b). This law set the stage for federal support of offshore artificial reef projects. With the policy in place, coastal states with approved, state-specific, artificial reef plans can identify offshore areas suitable for artificial reef developments. Therefore, oil and gas operators can work with state governments to transform decommissioned structures into artificial reefs as an alternative to onshore disposal.

Case Study – Oil Rig Removal Liability Fund: Artificial Reef Program in Texas

The Artificial Reef Program (ARP) receives 50 percent of an oil company's savings from converting the installation to a reef, rather than bringing the structure to shore for salvage. Federal regulations require decommissioned installations to be removed for salvage if they do not participate in the ARP. The funds received are used to finance research, administration, maintenance, liability costs, and construction of new artificial reefs. The funds also make the Texas Artificial Reef Program self-sufficient, with no need for taxpayer dollars (Texas Parks and Wildlife, 2011).

Determination of Feasibility	
Advantages	**Disadvantages**
• On the surface, the liability fund appears to benefit the offshore oil and gas industry as well as conservation efforts. • Multiple environmental benefits would ensue, including marine habitat creation and conservation.	• The financial potential of a revenue source based on oil rig removal liability is unpredictable. • If coordinated with the Rigs-to-Reefs program, there is concern that the new program could divert money from the state artificial reef programs. • The decommissioning of oil rigs does not occur on a regular basis, so a gap occurs in the funding stream when there is a lull in this activity. • The legislative requirements for such a program are murky. It is possible that a liability fund could be created as an amendment to the Rigs-to-Reefs federal policy. • There is a strong risk that the liability would outweigh the dollar benefits.

Fines

Viability	
Financial	Variable
Legal	Moderate
Political	Low
Social	High
Environmental	Neutral
Timeframe	Short

Some regulations, such as the Natural Resource Damage Assessment (NRDA) under the Oil Pollution Act, have a legal mandate to direct recovery dollars to the region affected. The NRDA process involves an extensive injury assessment followed by a restoration plan to aid in the recovery of resources and compensate for the losses from the impacts. Recommendations on how the NRDA process can more effectively produce conservation outcomes are discussed in a later section on Targeted Government Efficiencies.

The Clean Water Act allows the United States to seek civil fines for every drop of oil that is spilled into the nation's navigable waters. However, there is no regulatory mandate to direct the fines to the region impacted. Legislation has been introduced to direct 80 percent of Clean Water Act penalties from the Deepwater Horizon oil spill to Gulf of Mexico restoration. These fines, estimated between $5 and $20 billion, may otherwise go to the Federal Treasury for purposes unrelated to the oil spill (The Nature Conservancy, 2011).

Another form of fine for illegal activities consists of illegal fishing penalties for the violation of various federal marine statutes, such as the Magnuson-Stevens Act, the Endangered Species Act, the National Marine Sanctuaries Act, and others. Currently, these fines are directed to the NOAA Office of Law Enforcement. A portion of these fines could be allocated to improving fish stocks or planning efforts.

Determination of Feasibility	
Advantages	**Disadvantages**
• Pay out for violation fines can be quite large. For the Deepwater Horizon Gulf Oil Spill Clean Water Act violations, the fine estimates range from $5 to $20 billion depending on negligence findings. A one-time revenue infusion of this magnitude into a fund would be a healthy seed to generate grants and loans for marine conservation for years to come. • These regulatory statutes are already well established within the United States policy framework. • There is general social acceptance of such a revenue source, and most of the population would agree that violators should pay for environmental damages.	• The potential pay-out for the Deepwater Horizon Gulf Oil Spill is only so large due to the catastrophic scale of the oil spill. • In the case of Clean Water Act violations, the revenue stream would be very sporadic. • New legislation would need to be introduced to continue to direct Clean Water Act fines to a conservation-dedicated fund. • Political will could greatly depend on the particular category of fine monies that are sought, as illegal fishing fines are very controversial and unpopular with fishermen. • There is concern that establishing such a source would simply increase demand for enforcement services, and thus the cost of enforcement would be drawn from fines. Although enforcement is paid out of appropriated budgets in some cases, in other programs, enforcement and other costs come from fees paid by producers.

Mitigation

Viability	
Financial	Variable
Legal	Moderate
Political	Moderate
Social	High
Environmental	Neutral
Timeframe	Long

Compensatory mitigation is the third step in a sequence of actions that must be followed to offset impacts under the Clean Water Act Section 404 regulations. First, one must attempt to avoid, then minimize, and finally compensate. For unavoidable impacts (discharges to wetlands, streams, and other aquatic resources), compensatory mitigation is required to replace the loss to resource functions in watersheds.

There are three forms of compensatory mitigation, two of which have the potential to generate a funding stream: mitigation banking and in-lieu fee mitigation.

A mitigation bank is a business venture in which a large wetland is created, restored, or enhanced to generate wetland credits for sale to developers or others who need to offset unavoidable impacts.

An in-lieu fee (ILF) program may also sell mitigation credits for impacts. This is generally accomplished through fees paid to a sponsor, such as a nonprofit organization or a public agency, which are then used to develop an on-the-ground project within a certain time period.

Currently, the compensatory mitigation program applies only to tidal and non-tidal wetlands, as well as stream systems. With the appropriate regulatory environment, compensatory mitigation could extend to seagrasses, coral and oyster reefs, and other marine or coastal environments.

Determination of Feasibility	
Advantages	**Disadvantages**
• There is already a good model in wetland mitigation that can be emulated. • There would likely be a general acceptance of a marine mitigation program. • A marine resource mitigation plan would have no anticipated environmental impacts, as the program would likely follow the “no net loss” protocol of wetland mitigation.	• Marine resources may not generate enough revenue to make such a program sustainable. Since mitigation payments are based on the offset of impacted resources, there may not be enough impacts to create a fund, or the valuation of the offsets could be too low to generate significant revenue. • The establishment of a marine mitigation fund would require regulations that necessitate offsets. • Marine mitigation would likely be a longer-term effort. The valuation of offsets, the implementation of regulations, and the establishment of a fund would all require time to create.

Payment for Ecosystem Services

Viability	
Financial	Variable
Legal	Moderate
Political	High
Social	Moderate
Environmental	Positive
Timeframe	Long

Payment for ecosystem services (PES) assigns an economic value on services that natural resources provide, where payments are made for each measurable unit of natural resource performance. The concept of ecosystem services is attracting attention as a way to convey societal demands on ecological support systems. During the last three decades, there has been increasing research on the monetary value of ecosystem services, and interest has grown in the conceptual design of market-based instruments to create economic incentives for conservation (Westman, 1977; Costanza and Daly, 1992; Fisher et al., 2009). The concept has, however, had limited application. Emerging pilot projects and recent fully-operational programs, both domestic and international, utilize these concepts to develop markets to support conservation.

Ecosystem services in marine ecosystems can be derived from a number of sources including food from commercial fishing and aquaculture; tourism and recreation; storm protection through mangroves, wetlands, and coral and shellfish reefs; filtration of pollutants and nutrient cycling; renewable energy; and carbon sequestration (Forest Trends and the Katoomba Group, 2010).

The arrangement behind a PES is one where those who provide environmental services (e.g., landowners) get paid for doing so. Those who benefit from environmental services (e.g., population within a watershed) pay for their provision.

Following is a case study that describes a successful PES scheme:

Case Study – Payment for Ecosystem Services: Mexico Countrywide PES Program

The Mexico countrywide PES program directs water use fees into conservation of forest cover in priority areas for enhancement of hydrological resources. The goal of the program is to curb deforestation while at the same time protecting the aquifer recharge function of natural forestlands. Water scarcity is a serious problem in Mexico, as two-thirds of its aquifers are exploited beyond their capacity. The program provides incentives for forest conservation with a share of revenues from existing water fees.

The program funds originate from a dedicated share of the water use fees charged by the municipalities that are then channeled to the National Water Commission. This share is set at a fixed amount; it started at 200 million Mexican pesos (about US$ 20 million) in 2003 and was increased to 300 million Mexican pesos (about US$ 30 million) in 2005 (Water Markets, 2007).

The Mexico case study also provides an interesting model of how to scale up a PES scheme to the federal level.

Multiple model types and scales can be applied to PES, including:

1. Direct government payments: Through various incentives, including tax credits, easements, or other methods of compensating landowners for providing ecosystems services.
2. Private sector payments: Private businesses, nonprofit organizations, and other private groups may provide payments to landowners for the services that their natural resources or land use changes provide.
3. Regulatory-based payments: Regulated entities may use PES as a control measure to meet federally-mandated regulatory compliance. For example, to comply with sedimentation maximum loads, a regulated agency could purchase land in riparian areas to decrease development and assist in reducing sediment loads to meet permit requirements for sediments (World Bank, 2010).

A PES market is typically associated with a public policy or regulatory framework. However, the potential significant cost savings over engineered solutions may help drive the development of these service systems.

Difficulty with this model arises from the costs and time needed to quantify and verify the ecosystem services, the potential uncertainty about the quality of the services, and the need to involve multiple landowners for the system to be successful (requires significant buy-in).

Research and demonstration pilot projects throughout the United States are needed to improve the credibility of the PES model, to learn the best management practices for these systems and to demonstrate the potential cost-saving/revenue-generating potential of this model, in particular in ocean and coastal ecosystems.

Socially and politically, it is possible to frame the concept as mutually beneficial, although it is understandable that the general public may feel some apprehension and will not want to pay for services they currently benefit from freely.

PES systems can be set up in multiple fashions, from small, locally based markets, to large-scale federal mechanisms. The most suitable revenue-generating scheme will greatly depend on the scale of the project. Following are a few possible options:

1. Similar to the example in Mexico, a portion of municipal water utility fees is directed to a national fund, which then sets up PES systems throughout the nation in the watersheds or coastal areas in greatest need of water quality improvements.
2. Setting up a structure like stormwater fees within designated assessment districts. These assessment districts determine the geographic areas benefitting from the ecosystem services provided by a natural resource (Scarlett, 2011). For example, residents of a coastal assessment district that is protected from storm surges by an oyster reef would pay into the fund that allows for that reef to be protected and enhanced.

Determination of Feasibility	
Advantages	**Disadvantages**
• Multiple ecological benefits can be obtained from natural resources. For example, oyster reefs provide not only shoreline protection services, but also fish habitat and nutrient filtration services. • There is a clear nexus between the preservation and/or enhancement of the natural resource and the beneficiaries of the ecosystem service. • A PES program can be established for resources specific to the locality, i.e., oyster reefs for shoreline protection in the Southeast, or seagrasses for juvenile blue crab stock improvements in the Chesapeake Bay. • Socially and politically, it is possible to frame the concept as mutually beneficial.	• The true financial potential of a funding mechanism based on PES is yet to be discovered. Although examples of significant cost savings are emerging, to date, there are few on-the-ground examples of marine resource PES revenue streams. • Participation in a PES program could be limited if the payments to landowners are not high enough for them to forego other uses of the land/resource. Low levels of participation could result in programs with little or no control over the environmental improvements achieved. • People won't want to pay for services they currently benefit from freely.

Nutrient Trading

Viability	
Financial	Variable
Legal	Moderate
Political	Moderate
Social	Moderate
Environmental	Positive
Timeframe	Variable

Nutrient trading is an environmental market that involves a voluntary exchange between a buyer and a seller. What is being exchanged is a unit of environmental improvement. This market is driven by regulatory compliance of a set volume of nutrients allowable within water quality regulations for a given water body.

The nutrient trading market is based on the premise that reducing nutrient inputs differs in costs between pollution sources. Trading allows polluters with higher reduction costs to purchase pollution reduction credits from another source at a lower cost in order to meet regulatory requirements. Nutrient trading is typically from a point source to a nonpoint source, where the nonpoint source has a nutrient input reduction below the permitted levels. Dischargers can exchange these allowances amongst themselves, e.g., point source financing reductions in nonpoint source in lieu of undertaking more expensive point source pollution reductions.

Innovations in nutrient trading consist of the recent exploration into "nutrient assimilators" as a potential source for offset credits to point and nonpoint source polluters. One watershed where regulators are investigating the concept of nutrient assimilators into their nutrient trading program is the Chesapeake Bay region. In the Chesapeake Bay, nutrient assimilators include managed wetlands, shellfish reefs, and submerged aquatic vegetation such as algae and aquatic plants. Pilot studies and research have begun to incorporate nutrient assimilators into the public marketplace for the buying and selling of nutrient (nitrogen and phosphorous) credits.

Determination of Feasibility	
Advantages	**Disadvantages**
• No negative environmental impacts are to be expected with the implementation of a nutrient trading program; nutrient reduction would occur in a properly functioning market. • Nutrient trading could very well be combined with other credit trading mechanisms, such as wetland mitigation credits, endangered species offsets, etc. • The financial revenue potential generated by a nutrient trading funding mechanism would greatly depend on the size and the geography in which the market would be introduced, as well as the valuation of the credits; though significant returns could ensue.	• The timeframe for establishing such a program is difficult to predict. • The implementation of a nutrient trading program would require regulatory intervention with a cap on nutrient inputs to drive the market. • The need for funding can be substantial to set up a trading program. • The hydrologic divisions in a watershed nutrient trading system make it challenging. • Nonpoint source Best Management Practices remove nitrogen more slowly than point sources can add it. Because of this lag time, nonpoint source credits should not be used before the timeframe in which they are generated.

Blue Carbon

Viability	
Financial	Variable
Legal	Moderate
Political	Low
Social	Moderate
Environmental	Positive
Timeframe	Long

The aim of "blue carbon" is to do for mangroves, seagrasses and salt marshes what carbon credits have done for trees. Carbon credits are tradable certificates or permits representing a given unit of carbon dioxide. The blue carbon concept seeks to protect marine and coastal habitats by assigning credits to their stored carbon.

Carbon credits can be bought and sold on a carbon market. Both regulatory and voluntary carbon markets have gained popularity in recent years. The United States currently lacks the federal regulatory framework for emission reductions, hence not pressuring the emergence of the market.

Determination of Feasibility	
Advantages	**Disadvantages**
• Without a mandated cap on carbon, there are still opportunities to develop voluntary markets. • Mangroves could be added to the forest carbon portfolio. Though, how the funds derived from mangrove conservation would be financially separated from other forest types is unclear.	• Without a federal regulatory framework, a true revenue generating market would only be established with the onset of a cap on carbon. • Marine-based carbon sequestration may be many years away from implementation. Building a blue carbon framework would require technical build-up, public acceptance, government buy-in, and defined, measurable results. • It took decades to develop the carbon program in the forest sector. The general consensus is that the agricultural sector is the next in line for development. Blue carbon is still highly speculative at this point in time. • There is still social and political reluctance in the United States to accept the science of climate change.

National Partnership Agreements

Viability	
Financial	Variable
Legal	High
Political	High
Social	High
Environmental	Variable
Timeframe	Short

The public and private sectors can collaborate in creating a framework for marine conservation. Such a public-private partnership implies a common understanding of shared conservation goals.

A public-private partnership is a contractual agreement between a public agency (federal, state, or local) and a private sector entity. Through this agreement, the skills and assets of each sector are shared in delivering a service for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service (NCPPP, 2011).

There are critical components of any successful public-private partnership. They include the appropriate statutory and political environment, a guaranteed revenue stream, stakeholder support, and the appropriate matching of partners to accomplish the task (NCPPP, 2011).

Partnerships provide opportunities to team with non-traditional groups and organizations, for example, foundations that haven't historically worked on marine and conservation issues; corporations that have a stake in conservation; and groups that have traditionally not been viewed as conservation allies, but could play an important role in conservation and restoration such as aquaculture.

Case Study – NOAA's Community-based Restoration Program

The NOAA Community-based Restoration Program began in 1996 with the goal of sustaining local efforts to conduct coastal habitat restoration. Since its inception, the program has funded more than 1,500 projects. Cumulatively, these projects have restored more than 41,000 acres of habitat and have ameliorated fish passage in more than 1,700 stream miles, while simultaneously encouraging community-based participation in coastal conservation. The program successfully invests millions of dollars annually in restoration grants, leveraging double and triple the outcome by working with partner organizations. The enacted budget for the Community-based Restoration Program in Fiscal Year 2010 was $18.6 million (NOAA, 2011a).

Since 2001, the Conservancy and NOAA's Community-based Restoration Program have been working in a formal National Partnership to create healthy coastal habitats and increase economic and social well-being in coastal communities. Over this first decade, the partnership has been engaged in 124 community-based projects and some $8 million in federal funds have been matched by more than $10 million in additional state, local, and private funds to implement innovative restoration projects yielding tangible results that improve the condition of coastal waterways around the United States. These projects include (1) ecosystem restoration activities such as staghorn coral restoration in the Florida Keys, oyster and seagrass restoration in Virginia's Coast Reserve, and watershed restoration within California's Garcia River Watershed; (2) community engagement activities through Hawaii's invasive species removal program and Gulf of Mexico oyster reef restoration; and (3) socio-political leveraging as seen with the New York Great South Bay hard clam restoration and NOAA's recognition of shellfish as a priority habitat; to name a few.

Determination of Feasibility	
Advantages	**Disadvantages**
• The financial pay off for public-private partnerships will greatly depend on the entities entering the partnerships; however, seed funds can often be leveraged to many times the original amount. • Partnerships would not require federal legislative intervention; however, they would require some form of agreement between parties. • Partnerships are still a largely untapped market. It is thought that encouraging further public-private partnerships could lead to major innovation. • Partnerships could feasibly become adopted in a very short timeframe. • Public-private partnerships would most likely attract popular support, especially in arrangements that have significant community engagement.	• Without knowing the nature of the public-private partnership agreement, it is impossible to determine whether environmental impacts would result.

Targeted Government Efficiencies

Viability	
Financial	Variable
Legal	High
Political	High
Social	High
Environmental	Positive
Timeframe	Short

Targeted government efficiencies are viewed as a feasible option for cost reduction and maximizing existing federal dollars. This option may allow for changes and consolidations within agencies that would not require Congressional approval; hence, it is potentially faster and less cumbersome to implement than other funding options. The following are a few opportunities that may exist to develop more efficient uses of federal dollars and produce greater conservation outcomes with the money already budgeted.

(i) Natural Resource Damage Assessment

Natural Resource Damage Assessment (NRDA) is a legal process to determine the type and amount of restoration needed to compensate the public for harm to natural resources and their human uses that occur as a result of an oil spill. Restoration actions are principally designed to return injured resources to baseline conditions, but may also compensate the public for the interim loss of injured resources from the onset of injury until baseline conditions are reestablished. Historically, restoration activities have been completed at the site of injury or in close proximity to that site.

Restoring the habitat in the area of impact may assist in restoring the area to its baseline condition. However, that strategy may not result in the greatest conservation outcome for the resources impacted. In many instances, greater conservation outcomes would result from offsite restoration, sometimes in an entirely separate region or state. Provisions under existing NRDA regulations allow for offsite applications of settlement funds. However, stakeholders either might not understand those provisions or might not wish to apply funds offsite due to a desire to keep funds within the state or county impacted. Following is a case study where NRDA funds were applied out-of-state to assist with the protection of common loon nesting habitat.

Case Study – Targeted Government Efficiencies: NRDA Nesting Habitat for Common Loons

In January 1996, an oil barge ran aground off Trustom Pond National Wildlife Refuge in Rhode Island, spilling over 800 thousand gallons of heating oil. The incident resulted in the death of a multitude of fish, seabirds, crustaceans, mollusks, and other invertebrates. In 2000, NOAA, USFWS, and the State of Rhode Island reached a settlement agreement for the companies responsible for the oil spill. As part of that settlement, a portion of the restoration was to be conducted in the State of Maine, which provides nesting habitat for at least 125 common loon pairs and more than 600 pairs of nesting common eider. As a result, 1.5 million acres of Maine forests and lakes that provide these habitats were permanently protected through conservation easements and fee acquisitions (USFWS, 2005).

(ii) NOAA Grant Program Consolidation

The Fiscal Year 2012 Senate Commerce, Justice, Science, and Related Agencies Appropriations Bill report (the legislation that funds the activities and operations of NOAA) directs the agency to "consolidate funding for restoration and conservation grant programs throughout the agency, not only within NMFS, including the Estuary Restoration Program, the Damage Assessment, Remediation and Restoration Program, and the Coastal and Estuarine Land Protection Program…[with the purpose] to eliminate duplicative activities and administration, and establish a reasonable path forward for sound environmental restoration within the scope of the agency's authorization and financial potential" (Senate of the United States, 2011b).

No overarching legislation governs NOAA's stewardship programs; they are a collection of authorized programs with the goal to support healthy oceans and the human communities that depend on them. The direction of Congress to reorganize or consolidate NOAA's grant program is an effort to reduce operating costs through better coordination of programs with similar goals to maximize the funds available to achieve the goal. The following five principles are vital for a successful consolidated habitat conservation program at NOAA:

1. Any reorganization or consolidation must have, as its stated purpose, a furthering of NOAA's mission and statutory responsibilities to conserve and restore coastal habitats important to threatened and endangered species, commercial and recreational fisheries, and the people and communities who rely upon them.

2. Priority should be given to the core missions of existing programs, including but not limited to: stream barrier and dam removal, coastal land protection, estuarine habitat restoration, and floodplain restoration and protection.
3. The efficiency and cost effectiveness of NOAA's cooperative agreements and strategic partnerships with coastal states and NGOs should be recognized.
4. A commitment should be made to maintaining adequate funding for habitat conservation in the face of any reorganization. Redesigning the implementation of these programs should not be an exercise solely driven by cost cutting.
5. Any reorganization or realignment plan will be most successful when developed in consultation and with the full participation of the states, communities, and organizations whose missions align with, and whose actions help achieve NOAA's mission.

(iii) Increase Coastal and Estuarine Nonpoint Source Projects under the CWSRF

As allowed by the Clean Water Act, states have some flexibility in designing their Clean Water State Revolving Fund programs to meet their individual clean water needs. States may choose the extent to which they will use CWSRF funds to support point source (e.g., wastewater treatment plant construction) and nonpoint source (e.g., implementing agricultural best management practices) projects.

CWSRF funding for nonpoint source pollution activities account for approximately four percent of monetary allocations; however, it accounts for over 25 percent of all CWSRF-supported activities. Nonpoint source projects are typically less expensive than wastewater infrastructure projects; therefore less money can fund a larger percentage of projects for greater water quality outcomes. As of 2006, thirty-seven states reported using CWSRF to directly support nonpoint source projects (GAO, 2006).

Under existing CWSRF regulations, states can use funds for a number of coastal and estuarine-related projects, including the development of Comprehensive Coastal Management Plans under EPA's National Estuary Program. In the state of Washington, for example, up to 20 percent of its CWSRF dollars are used to support nonpoint source projects and estuary conservation and management projects. Meanwhile, in Alabama, state law defines only traditional public wastewater treatment facilities as appropriate projects under its CWSRF program (GAO, 2006).

Case Study – Targeted Government Efficiencies: Innovative Use of CWSRF Funds for Land Acquisition

Funding from California's CWSRF helped The Nature Conservancy of California purchase a 12,362-acre portion of the Howard Ranch in southeast Sacramento County, one of the largest land acquisitions funded in the United States under the CWSRF. The California State Water Resources Control Board and the EPA supplied an $8 million low-interest loan for the Conservancy to complete the $13.6 million fundraising target (Ernst and Hart, 2005).

A shift to a greater acceptance and use of CWSRF funds for nonpoint source projects, and in particular coastal and estuarine projects in coastal states, should occur. Existing federal regulations allow for those activities, and there is a need for education to demonstrate that the same water quality outcomes can be achieved through "green infrastructure" and other methodologies with potentially great cost savings.

In addition to a shift from hard infrastructure, the CWSRF program could also be an ideal launching pad for the expansion of water quality-based PES or water quality trading systems throughout the United States. Water companies and utilities across the globe are beginning to demonstrate projects with the promise of cost savings over traditional hard infrastructure projects and upgrades.

The case study on the next page provides a great example of how such a payment or trading program could generate water quality improvements to meet the goals of the Clean Water Act which are addressed by the CWSRF. The cost savings achieved from this project provides an example of how a PES/water quality trading mechanism might be well suited under the CWSRF.

Case Study – Water Quality Trading in the Tualatin River Watershed, Oregon

Clean Water Services (CWS) is a special-purpose district utility in Washington County, Oregon, that provides wastewater and stormwater management services to over five hundred thousand residents. CWS operates two wastewater treatment plants that discharge to the Tualatin River – a water body impaired for temperature, nutrients and other indicators. In 2001, the Oregon Department of Environmental Quality (DEQ) issued a Total Maximum Daily Load (TMDL) for temperature in the Tualatin River and its tributaries (DEQ, 2001). The TMDL showed that approximately 40 percent of the thermal energy input into the Tualatin River comes from the sun's energy reaching the river from altered urban and rural land use (CWS, 2005). These impacts from loss of shade created the opportunity to develop a trading program by restoring streams as opposed to technological solutions at the treatment plants. The Tualatin trading program augments tree canopies, manages invasive species, and engages in other activities to increase the amount of shade along streams. The permit obtained by CWS allows it to address its treated effluent discharge temperature requirements by trading point-to-nonpoint thermal load reduction credits within the watershed. By trading thermal load reduction credits, CWS and its ratepayers were able to avoid $60 to $150 million for construction and maintenance of refrigeration units at its wastewater treatment facilities (Cochran and Logue, 2011), while the trading option has cost just $4.3 million, a 95% cost savings compared with traditional approaches (Roll et al., 2008).

Determination of Feasibility	
Advantages	**Disadvantages**
• Effective use of existing dollars for greater conservation outcomes. • Potentially large sums of money could be directed to conservation. • Would not require a new funding mechanism. • There is a strong willingness from the Administration and Congress to streamline programs. • Likely to be popular amongst taxpayers. • Positive environmental outcomes are to be expected as existing funds would target greater conservation achievements.	• Reconfigured programs would still require going through the annual appropriations process. • Consolidating programs could have unwanted outcomes, including having to make difficult decisions regarding eliminating important or popular programs. • Streamlining does not always equate to efficiencies and added dollars for the programs of environmental importance.

Appendix C:

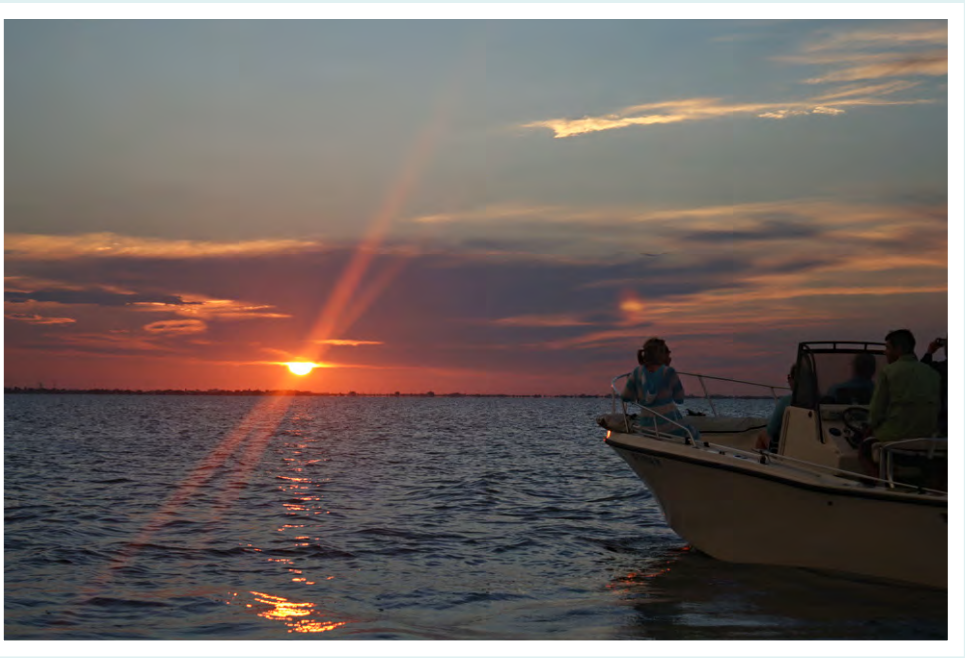
State and Local Revenue Sources

Appendix C: State and Local Revenue Sources

The following state and local revenue sources were discovered during the initial research. Although not applicable to the scope of this project, these ideas may prove useful as tools for providing state or local matching funds for a federal-level funding mechanism.

Source	Description
Bag Tax	A tax for the use of disposable bags. The District of Columbia imposes a five-cent tax on disposable retail bags (paper and plastic). The tax generated a total of $2 million in 2010.
Bioprospecting	Research into new sources for pharmaceuticals and other products of potential economic value.
Bottle Tax	A tax on the purchase of certain bottled beverages (typically excludes juice, milk, and two-liter sodas). For example, the City of Baltimore has adopted a two-cent tax on some bottled beverages. The tax is expected to generate $5.7 million for the City over three years.
Cigarette Tax	Cigarette tax is an excise tax on the sale or possession of cigarettes.
Diving Fees	A tourism-based source of revenue that is derived from diving fees for marine protected areas.
Fishery Best Management Practices and Certification	Voluntary private-sector programs, such as certification programs, can provide incentives for private entities (e.g., aquaculture) by providing recognition for ecologically sound practices; such as improving operation water quality and implementing price premiums for customers willing to pay more for sustainable products. Through a certification program, consumer purchasing power is harnessed to generate change while also promoting marine protection and restoration.
State and Municipal Government Bonds	Two types of government bonds are available: general obligation (GO) and revenue. GO bonds are backed by the issuer's ability to tax. Money for revenue bonds is generated from the operation of the project being financed or from other non-tax sources. Some bonds consist of hybrids of these two types. Government bonds are most frequently applied at the state and local levels of government.
Hotel/Transportation Fees	Allocation of a portion of hotel and airport fees and taxes to support conservation efforts. Can include the establishment of an additional fee or tax specifically to raise funds for conservation.
Impact Fees	Impact fees can link revenues to practices to be rectified or accounted for (e.g., development impacts). Revenue from Impact Fees can help recover the cost incurred by a local government in providing public facilities required to serve the new development.
Lottery Revenue	On average, states receive 31.5 percent of the revenue from lottery ticket sales as final proceeds. In some states the amount is much larger. Proceeds may be allocated to fund conservation efforts.
Real Estate Transfer Tax	A portion of the real estate transfer tax is directed to a fund dedicated to conservation programs.
Recreation Fees	A tourism-based source of revenue that is derived from recreational activity fees for uses such as transportation and camping.

Source	Description
Right-of-Way Fees for Telecommunication Industry	Fees assessed for each mile of telecommunication cabling and other conveyance cables and pipes. For example, the California Coastal Commission requires applicants to compensate for project-related impacts to hard-bottom habitat with a fee of $27.31 per square foot to be used to construct a new artificial reef or augment an existing artificial reef in state waters.
Selective Sales Tax on "Polluting Items"	Selective sales taxes on items such as agricultural chemicals or fuels raise revenue and can shift behavior away from polluting products. Tax could be designed in concert with federal, state, and private sector program to leverage additional monies.
Shipping Insurance Premium Tax	Insurance premiums tax is a tax paid by all stock insurance companies, mutual insurance companies, and captive insurers doing business in a given state. The tax is assessed on premiums collected by insurance companies on policies written in the state during the preceding calendar year. The insurance premium surcharge is charged and collected by every insurer (other than life insurers) on premiums, assessments, or other charges, for insurance coverage provided to its policyholders on risks located in the given state.
Specialty License Plates	Raise money and awareness for a cause through increased fees for specialty motor vehicle license plates.
State Income Tax Check-off	With check-off programs, taxpayers "check off" a contribution to state programs on a state personal income tax form.
Statewide Sales Tax Increase	Tax on the sales of goods or services. In Iowa, 2010 voters supported the Water and Land Legacy Amendment, a measure designed to fund future conservation efforts in the state. The measure will amend the Iowa constitution and set aside 3/8 of 1 percent of the next increase to the state's sales tax for conservation projects. The amendment creates the Natural Resources and Outdoor Recreation Trust Fund.
Transfer of Development Rights	The transfer of development rights (TDR) provides communities with a tool for redirecting growth from one area of a community to another. The TDR is a planning technique for controlling development density. Under such a program, a community or regulatory agency regulates site densities by allowing higher densities on some parcels in exchange for lower densities on other parcels. Use of a TDR requires establishing both "sending" and "receiving" areas.
User/Entry Fees	A tourism-based source of revenue derived from entry fees for protected areas.
Utility Surcharges	These are sewer or stormwater surcharges, funneled to a dedicated fund. A utility is an enterprise that performs a service and has the authority to charge fees for that service. For stormwater management, landowners are assessed a fee that is based on their parcel size and the degree to which their land is developed. Typically, residential parcels are grouped into a size class with a common fee within each class. Commercial parcels are assessed individually and charged a site-specific fee. Fees are most commonly collected via existing water bill systems or as a line item on property tax statements. These utilities could be established within a municipality, a county, or encompass a whole watershed.



Appendix D:

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Appendix D: Works Cited

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